

Start-up and Service Manual

System



profTEMP

having your hot runner under control



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1 **Typographical Conventions**

Symbols and conventions are used in this document for faster orientation for you.

Symbols

	Caution	With this symbol, references and information are displayed which are decisive for the operation of the device. In case of non-compliance with or inaccurate compliance there can result damage to the device or injuries to persons.
	Note	The symbol refers to additional information and declarations, which serve for improved understanding.
	Example	With the symbol, a function is explained by means of an example.
	Reference	With this symbol, information in another document is referred to.
	FAQ	Here FAQ (Frequently Asked Questions) are answered.
	To use	... specifies which materials, components etc. are to be used.
	Installation	... indicates how the installation should take place, for example, order, arrangement, etc.
↗		Cross references are marked with this character. In the pdf version of the document the objective of the cross reference is reached via the link.
Equations		Calculation specifications and examples are represented in this way.
<View>		Menu points (e.g. view) are represented in this way.
Project		Windows (e.g. project) are represented in this way.
n.a.		Not applicable, not existing
	Warning, Possibility of electric shock	In all cases where the adjacent symbol is to see, the start-up and service manual must be consulted.
	General warning sign	

1.1 Additional and continuative documents

	Protocol PSG II	Information on this topic are in the protocol description PSG II and the corresponding object lists.
	Protocol PSG II Ethernet	Information on this topic are in the protocol description PSG II Ethernet and the corresponding object lists.
	Protocol Modbus	Information on this topic are in the protocol description Modbus and the corresponding object lists.
	Protocol Modbus/TCP	Information on this topic are in the protocol description Modbus/TCP and the corresponding object lists.
	Protocol CANopen	Information on this topic are in the protocol description CANopen and the corresponding object lists.
	Protocol VARAN	Information on this topic are in the protocol description VARAN and the corresponding object lists.
	Data sheets and operating manuals	Available by Internet see www.psg-online.de .

1.2 Product safety and quality certification marks



cTUVus Certification

cTUVus Certificate CU 72142541.01 based on UL 61010-1:2012 CAN/CSA-C22.2 NO.61010-1-12



CE Marking

2 Security References

For the System profiTEMP hereinafter referred to as device (consisting of see ↗Scope of supply (page 9)), the following safety instructions must be observed.



Before installation, handling or operation of the device, please read through this start-up and service manual completely and carefully.

2.1 Security References for User

All persons, responsible for the mounting/start-up/operation/maintenance/servicing of the device, have to

- be skilled appropriately
- consider this start-up and service manual exactly
- regard this start-up and service manual as part of the product
- maintain this start-up and service manual during lifetime of the product
- pass this start-up and service manual to all successive owners or operators of the product
- make sure, that every obtained amendment is integrated in this start-up and service manual.

Please note the following safety instructions necessarily for protection against electric shock, risks of injuries and fire.

Before start-up, adhere strictly to the local safety regulations as well as the safety instruction.

Consider the regulations for prevention of industrial accidents for electrical installations and equipment by government safety organization in industrial facilities.

Do not throw packaging material careless away, thermoplastic foil/ styrofoam parts etc. may get dangerous for persons.

The device must be installed as described in chapter ↗System profiTEMP pT-Rack Installation in cabinet (page 18).

Protect device against moisture. Do not use in areas with high humidity.

Check, that the specified voltage on the type plate is identical with the mains voltage on-site.

Ensure that the power cord and the connecting cables are not damaged by overrun, squeezing, tearing or suchlike. Protect the cords/cables against oil, sharp edges and temperatures above 70 °C.

Connect the connecting cable only in de-energized status.
Place the connecting cable to prevent stumbling.

Assure yourself that the e.g. connected injection mold is linked to the protective conductor.

Do not place any tanks, filled with liquid, on the top of the device, otherwise a dangerous situation may emerge.

The area around the fan must be kept open. Do not insert any objects.

Work like e.g. maintenance and repair may be carried out by authorized and skilled qualified personnel only. Only qualified personnel, skilled and on the risks trained, may use the device. The relevant accidental regulations as well as other general approved safety-relevant, occupational-medical norms have to be obeyed. Unauthorized modifications of the device exclude liability of the manufacturer/supplier for resultant damages.

Before working on this device always switch-off the mains switch and make sure that the device is de-energized. Protect the supply voltage against unintentional reclosing.

Components may only be brought into operation, when they were implemented safe of contact before.

If this device is integrated in a system, the system producer is responsible for the security of the system.

		In all cases where the adjacent symbol is to see on the device, note the safety instructions necessarily on the System profiTEMP identified by this symbol/ sign/label. In all cases this start-up and service manual must be consulted.
Warning, Possibility of electric shock	General warning sign	

2.2 Intended use

The System profiTEMP is exclusively designed for temperature-dependent control of electric heaters. It is intended solely for installation in a cabinet which can only be opened with a tool or key from qualified personnel. The cabinet must be build up in a way that protection against electric shock and fire protection based on UL 61010 and CSA C22.2 No. 61010 is guaranteed. Project setup and start-up can be carried out by the PSG own project setup and configuration tool flexotempMANAGER. For the parameterization of customer desired functions, the installer of the system is responsible. The System profiTEMP provides extensive error messages (see chapter ↗Status display - Trouble Shooting (page 55)) and security functions that can and must be used by the installer of the system in individual responsibility. Operation by PC with installed PSG own PC software (project setup and configuration tool flexotempMANAGER or operation software **TEMPSoft2**) and/or via bus connection to machine control.

	If the System profiTEMP is not used for this intended purpose, safe operation of the equipment is not guaranteed.
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Uses other than the above shall be improper and exclude the liability of the manufacturer/supplier for any related persons -, property - and consequential damage.

2.3 Maintenance

No special maintenance of the System profiTEMP is necessary. Maintain a clean surface of the operating unit. For cleaning use a damp cloth. Avoid the use of solvents, cleansers and abrasives.

2.4 Warranty Conditions

This product is subject to the legal warranty time periods for faults or deficiencies in manufacture.

Content of Warranty

If a malfunction relatively occurs through the manufacture, the manufacturer/supplier repairs or replaces the non-conforming product, according to their own discretion.

The following repairs do not fall under the warranty and are liable to costs:

- Malfunctions after the legal notice periods have expired.
- Malfunctions caused through operating error and/or incorrect parameterization of the user (if the device is not operated as described in the start-up and service manual).
- Malfunctions caused through other devices.
- Changes or damage to the device which do not originate from the manufacturer/supplier.

If you wish to use services within the framework of this guarantee, please refer to the manufacturer/supplier.

2.5 Transport and Storage

2.5.1 Transport

The System profiTEMP (all single components together) is packed fully-mounted in a robust carton, cushioned with foamed material. This assures sufficient protection in normal case.

2.5.2 Unpacking

Check the packaging and then System profiTEMP for identifiable damage incurred during transit. If damage is identified, then please get in touch with the transportation company.



In the case of damage System profiTEMP may not be brought into operation.

2.5.3 Storage

If you should not put the System profiTEMP into operation immediately, store it protected against dirt and moisture. Permissible temperature -20...70°C, average permissible humidity < 95 % per year, no condensation.

2.6 Lift and carry

A fully constructed profiTEMP pT-rack weighs under circumstances more than 18 kg. For this reason, the system profiTEMP is supplied in individual components. These must be individually transported. When setting up the system, make sure that the profiTEMP pT-Rack first is installed in accordance with chapter 7 System profiTEMP pT-Rack Installation in cabinet (page 18). Then it can be assembled with the individual components. A fully constructed rack must be disassembled before transport into individual components.

2.7 Disposal

PSG Plastic Service GmbH as a manufacturer within the meaning of ElektroG (Electrical and Electronic Equipment), which implements the European WEEE directive 2002/96/EC in German law, is registered under number WEEE registration number DE 66448978. In this case, the components of the System profiTEMP are considered.

3 System profiTEMP - Hot Runner Controllers, which match and adapt



Your advantages are obvious

Seamless integration in the operation logic of the injection molding machine

Robust and field-proven control algorithms

Space-saving, gain in ease of use and consistent product quality

by

- Connecting Diagnostics - Each time at switch on the electric system is checked
- Prevents overmolding
- Mold-check - Complete diagnosis of electric systems including wiring
- Heat'n'Dry - For a longer lifetime of your heating elements
- Easy maintenance - LED's assist in diagnosing
- Heater control - Control of cable break, short circuit of heating coil, heater breakdowns and insulation defects
- ...

3.1 Scope of supply

Generally **System profiTEMP** consists of the following components



pT-Rack (here type S)



pT-CUR



HCC 06/16/S *

profiTEMP pT-Rack		
	02 04 06 08	Slots for controller cards
	W F S and/or Mini	Type Wall mounting Front mounting Swing and/or Mini (customer specific designation)
profiTEMP Control Unit Rack pT-CUR (with insulating board made of polystyrene)		
	48 250	Number of zones
	- / VARAN	without / with VARAN interface X10 & X11
	- / HUB	Ethernet interface X2 / X1 & X2
	- / WKZ	without / without Hot Runner mold identification & External reference junction
	IOF / IOK	Digital in- / - outputs by ribbon cable X4 / terminals X5
	- / USB	without / with Data export/-import X3
profiTEMP Controller Card HCC 06/16/S EU/US and HCC 06/16/S EU		
	6 Zones / max. 15 A; front panel metal sheet; two-pole protection and one-pole disconnection	

■ **profiTEMP pT-Rack** (types see above)

Rack system containing Control Unit pT-CUR and Controller Cards HCC 06/16/S *



For 12, 24, 36 and 48 zones; expandable by concatenating several pT-Racks

■ **profiTEMP Control Unit Rack pt-CUR** (types see above)

Coordination of functions between controllers
 Interface between control/visualization and the controllers
 IO-Module for digital and analog inputs



Up to maximum 250 zones

■ **profiTEMP Controller Card HCC 06/16/S *** (types see above)

Autarkic temperature control
 Sensor inputs, heating outputs, monitoring



6 zones per Controller Card HCC 06/16/S *

Further parts

■ **profiTEMP Rack dummy board** metal sheet pT-BPB06TE and/or pT-BPB12TE

cover front side pT-Rack



2 sizes
 Not part of delivery

■ **Connecting cable**

Between pT-CUR and the following Power Plane pT-PP-PCB in pT-Rack.
 Between pT-Racks (the amount of the components depends on the number of zones)



Not part of delivery

Various parts, not part of delivery, described in chapter 7 System Configuration (page 16) as **To use**.

4 Technical Data

Following is the technical data for the used components for **System profiTEMP**.



pT-Rack (here type S)



**pT-CUR
with insulating board**



HCC 06/16/S *

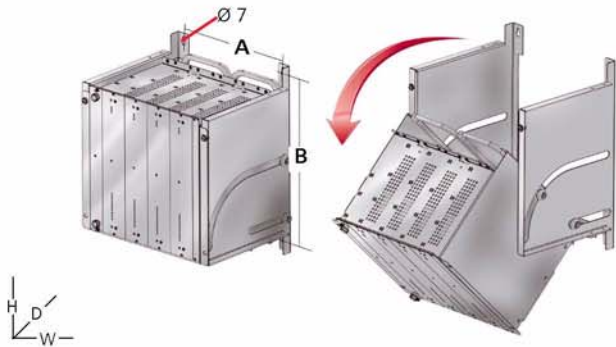
You can find the latest technical data on all PSG products at any time on the homepage www.psg-online.de.

4.1 profiTEMP pT-Rack - Rack system & Dummy boards

profiTEMP pT-Rack Swing

pT-Rack slots	2	4	6	8
Outside dimensions	Bracket included			
Width in mm	216.7	338.6	460.5	582.4
Height in mm	400.0	400.0	400.0	400.0
Depth in mm	267.5	267.5	267.5	267.5
Mounting drilling distance/dimensions				
A in mm	146.7	268.6	390.5	512.4
B in mm	360.0	360.0	360.0	360.0
Weight	Swing frame inclusive			
in kg	7.7	9.6	12.3	14.1

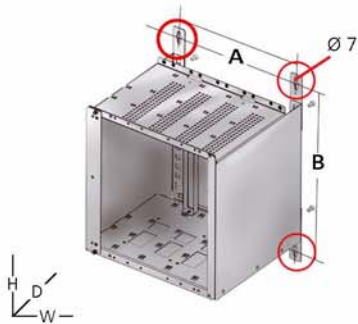
Front panel 1 HCC card = 12 TE
1 TE = 5.08 mm



Wall mounting profiTEMP pT-Rack W

pT-Rack slots	2	4	8
Outside dimensions	Bracket included		
Width in mm	174.1	294.6	538.4
Height in mm	400.0	400.0	400.0
Depth in mm	266.5	266.5	266.5
Mounting drilling distance/dimensions			
A in mm	146.7	268.6	512.4
B in mm	360.0	360.0	360.0
Weight	Inclusive wall mounting set		
in kg	4.6	6.3	9.9

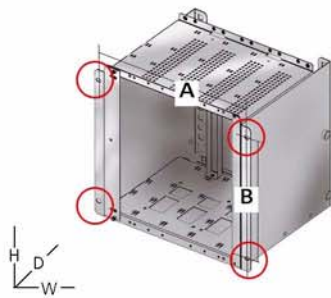
Front panel 1 HCC card = 12 TE
1 TE = 5.08 mm



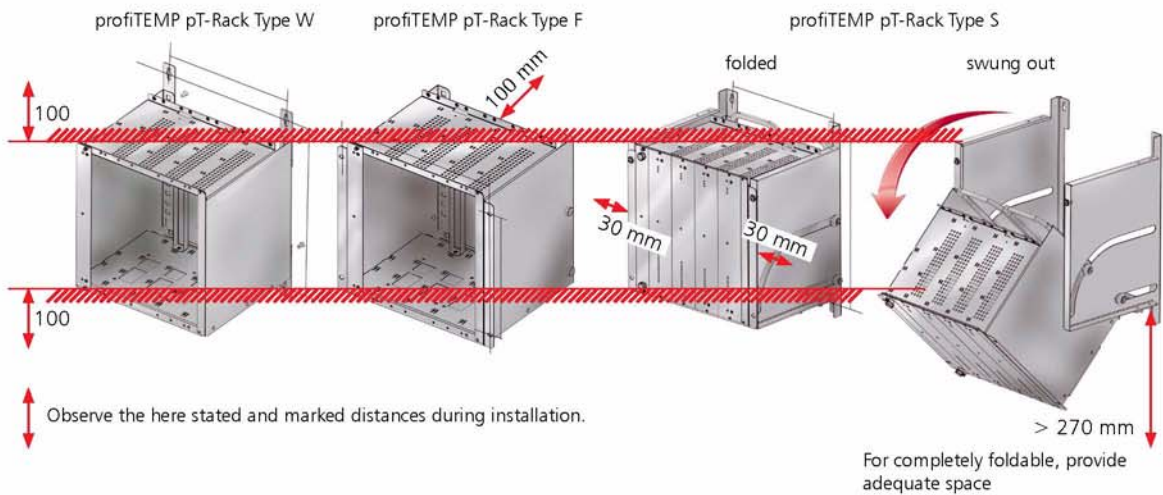
Front frame profiTEMP pT-Rack F

pT-Rack slots	2	4	8
Outside dimensions	Bracket included		
Width in mm	216.7	338.6	582.4
Height in mm	327.4	327.4	327.4
Depth in mm	264.5	264.5	264.5
Mounting drilling distance/dimensions			
A in mm	200.1	322.0	565.8
B in mm	234.1	234.1	234.1
Weight	Front frame inclusive		
in kg	5.1	6.9	10.7

Front panel 1 HCC card = 12 TE
1 TE = 5.08 mm



Installation position



Technical Data

Power supply Heating	400 VAC Y (3~/N/PE) or 230 VAC Δ (3~/PE)	
Fuse protection load circuit	External 3 x [see specification under power on type plate]; 3-pole breaker with characteristic B	
Sound pressure level	< 50 dB	
Ambient temperature limit	Operation: 0 ... 55 °C, transport, storage: -20 ... 70°C	
Atmospheric humidity limit	Operation: 0 ... 90 % relative atmospheric humidity, no condensation; Transport, storage: 0 ... 95 % relative atmospheric humidity, no condensation	
Standards	cTUVus Certificate CU 72142541.01 based on UL 61010-1:2012 CAN/CSA-C22.2 NO.61010-1-12	
Connecting cables	Power supply for electronics (U _{EL})	Cable length < 30 m
	Sensor cables	Cable length < 30 m; use shielded connecting cables
	I/O cables, connecting cables for external reference junction on pT-CUR	Cable length < 30 m

Accessories	Order number
profiTEMP Power Plane Board pT-PP-PCB	025 320
profiTEMP connecting cable pT-PP-PCB	025 320-01
profiTEMP Rack dummy board metal sheet pT-BPB12TE	025 331-10
profiTEMP Rack dummy board metal sheet pT-BPB06TE	025 331-00

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4.2 profiTEMP Control Unit Rack pT-CUR

Technical Data pT-CUR

Number of zones	Maximum 250 zones	
In-/outputs	By spring-force terminal	
Digital input X4 and/or X5	Number: 4 0...30 VDC, Low level 0...1 VDC, High level 4...30 VDC, $I_{MAX}=12$ mA at 30 VDC	
Alarm output X9	Number: 1 Potential-free relay contact (2-pole spring-force terminal) 250 VAC / 1 A	
OPTION Measurement input X12	Number: 2 (external reference junction resistance thermometer Pt100 3-wire) Measurement range -10 ... +70 °C Internal resolution 0.1 K	
OPTION Digital inputs for Hot Runner mold identification X12	Number: 8 0...30 VDC, Low level 0...1 VDC, High level 4...30 VDC, $I_{MAX}=12$ mA at 30 VDC	
Digital output X4 and/or X5	Number: 4 10...30 VDC, 100 mA at $T_a=25$ °C	
Data interfaces		
CAN network X8 (CAN2)	Connection of control system with superior PLC or control; Spring-force terminal	
	Address range	Address range 1...127
	Transfer rate	78.8, 100, 125, [250], 500, 800, 1000 KByte configurable by flexotempMANAGER
	Max. tolerable bus length (m)	600, 500, 450, 250, 100, 50, 30
	Device internal terminating resistor	Can be activated by jumper
Ethernet	10/100 Base-T, RJ45 connection	
	Address range	1...254
	Available connections	TCP/IP (Ethernet Interface, OPTION Ethernet Interface)
Optional Data interfaces	OPTION VARAN RJ45-Connection; OPTION USB Data ex-/import	
RS232/RS422 configuration interface X4 and/or X5	Indirect coupled, RS232/RS422 4-wire separately outputs. Available operation as RS422 (4-wire) and/or RS485 (2-wire). Ribbon cable / Spring-force terminal	
	Address range	0...255 (PSGII), 1...255 (Modbus RTU)
	Transfer rate	1200, 2400, 4800, 9600, [19200] Baud
	Stop and parity bit	2 Stop bits, NO parity
	Protocol	Modbus RTU/PSGII
Power supply for electronics U_{EL}	20...30 VDC (SELV / PELV); Power supply for electronics (U_{EL}) are not designed for operation on DC power supply;	
Current consumption	~ 500 mA	
Ambient temperature limit	Operation: 0 ... 55 °C, transport, storage: -20 ... 70 °C	
Atmospheric humidity limit	Operation: 0 ... 90 % relative atmospheric humidity, no condensation; Transport, storage: 0 ... 95 % relative atmospheric humidity, no condensation	
Mounting	Slide-in card in pT-Rack; insulating board made of polystyrene	
Dimensions (H x W x D in mm)	306 x 34 x 120	
Weight kg	Ca. 0.4	
Connecting cables	Power supply for electronics (U_{EL})	Cable length < 30 m
	Sensor cables	Cable length < 30 m; use shielded connecting cables
	I/O cables, connecting cables for external reference junction on pT-CUR	Cable length < 30 m
Electrical security	Complies with EN 61010-1 (VDE 0411-1), protection class I, over voltage category III, contamination class 2, operating voltage 500 V	
Protection type	Housing and terminal: IP 00 / incorporate in frame: IP20	
Standards	Complies with EN61326-1; cTUVus Certificate CU 72142541.01 based on UL 61010-1:2012 CAN/CSA-C22.2 NO.61010-1-12	
CE marking	The device complies with the European Directives for electromagnetic compatibility.	

4.3 profiTEMP Controller Card HCC 06/16/S

Technical Data

Installation	In pre-assembled pT-Rack (pT-PP-PCB, line bar, fan)	
Sensor input	Number: 6; screwed terminal Combicon 3.81;	
Thermocouple TC	Fe CuNi type L (-35...500°C), Fe CuNi type J (-35...500°C), Ni CrNi type K (-35...900°C)	
Accuracy of measuring	< 1 K	
Protection equipment	Reversed polarity of power supply: diode, over voltage temperature input: electronic detection and signaling	
Power output	Number: 6; Faston flat-cable plug 6.3	
Power rating	230 VAC, 15 A per zone; dissipation loss per zone at 15 A max. 20 W; At ambient temperatures $\geq 50^\circ\text{C}$, max. output power 20 kW per HCC card	
Output signal	Phase angle or pulse group output / zero-crossing switching	
Fuse protection	Fuse protection on card; 2-pole; 6.3 x 32 mm; Use ONLY fuses of type SIBA FF 16A Art.No. 7012540.16	
Per power controller card	Fuse protection, current registration, leakage current measurement (current transformer on pT-PP-PCB)	
Coincidence factor	Coincidence factor = 100% duty ratio permanently at ambient temperature $\leq 25^\circ\text{C}$; At ambient temperatures from 25°C to 55°C , the coincidence factor can reduce up to 70% depending on the average output values and their duration.	
Note	Information about the coincidence factor applies only to installation in released PSG Racks	
Temperature control	Integrated on card	
Measurement input leakage current measurement	By external current transformer on pT-PP-PCB	
Measurement range	0...60 mA	
Resolution	Internal 0.1 mA	
Accuracy of measuring	5% of final value	
Protection equipment		
Reversed polarity of power supply	Diode	
Overload protection	Yes	
Disconnection of power outputs in case of excess temperature	The system internal self-protection turns off the heaters temporarily when the heatsink temperature exceeds 100°C .	
Data interface		
CAN field bus	Address range	CANopen norm slave based on DS401, address range 1...127, fix by DIP switch
	See configuration	
	Transfer rate	Adjustable by jumper on card: 250k or 500k (default, jumper set)
	Max. tolerable bus length (m)	Dependent on transfer rate
Terminating resistor	120 Ohm, must external be set (on pT-PP-PCB)	
Power supply for electronics U_E	20...30 VDC (SELV / PELV); Power supply for electronics (U_E) are not designed for operation on DC power supply;	
Fuse protection for electronics	External	
Current consumption at 24 VDC	Per HCC 06/16/S = 0.45 A (incl. fan)	
Power supply Heating	400 VAC Y (3~N/PE) or 230 VAC Δ (3~/PE)	
Fuse protection load circuit	External 3 x [see specification under power on type plate]; 3-pole breaker with characteristic B	
Ambient temperature limit	Operation: $0 \dots 55^\circ\text{C}$, transport, storage: $-20 \dots 70^\circ\text{C}$	
Atmospheric humidity limit	Operation: $0 \dots 90\%$ relative atmospheric humidity, no condensation; Transport, storage: $0 \dots 95\%$ relative atmospheric humidity, no condensation	
Mounting	Plug-in into pT-Rack	
Dimensions (H x W x D in mm)	280 x 210 x 60 (with heat sink)	
Weight (in kg)	1.4	
Electrical security	Complies with EN 61010-1 (VDE 0411-1), protection class I, over voltage category II (from HW number 000010 on over voltage category III), contamination class 2, operating voltage 300 V	
Protection type	Housing and terminal IP 00	
Electro-Magnetic Compatibility (EMC)	Complies with EN61326-1; EN 61010-1	
CE marking	The device complies with the European Directives for electromagnetic compatibility (complies with EN 61326-1) and low voltages (complies with EN 61010-1).	
Standards	cTUVus Certificate CU 72142541.01 based on UL 61010-1:2012 CAN/CSA-C22.2 NO.61010-1-12	
General		
Software update	By interface master component pT-CUR pT-DU pT-DC pT-CU;	
Connecting cables	Power supply for electronics (U_E)	Cable length < 30 m
	Sensor cables	Cable length < 30 m; use shielded connecting cables
	I/O cables, connecting cables for external reference junction on pT-CUR	Cable length < 30 m

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5 System Configuration



The basic system design is explained in the Start-up and Service manual using a pT-Rack S (Swing) / Mini. The implementation of the number of zones can vary.

The following work should be performed **prior** to commissioning of the system.



Warning, Possibility of electric shock



General warning sign

In all cases where the adjacent symbol is to see on the device, note the safety instructions necessarily on the System profiTEMP identified by this symbol/sign/label. In all cases this start-up and service manual must be consulted.



If the System profiTEMP is integrated in a system, the system installer is responsible for the security of the system.
For the parameterization of customer desired functions, the installer of the system is responsible.



Work like e.g. maintenance and repair for System profiTEMP may be carried out by authorized and skilled qualified personnel only. Only qualified personnel, skilled and on the risks trained, may use the System profiTEMP. The relevant accidental regulations as well as other general approved safety-relevant, occupational-medical norms have to be obeyed.



Before working on the System profiTEMP always switch-off the mains switch and make sure that the System profiTEMP is de-energized. Protect the supply voltage against unintentional reclosing.



Single components must be replaced by components of the same type (see type plate). Take care to transfer the same settings (e.g. parameterization).



Before switch-on of the zones it is to be ensured that the System profiTEMP is configured for the application (see chapter 7 Intended use (page 6)). An incorrect configuration can lead to damage to the control section or to injuries to persons.



The action concerning the handling of ESD devices must be observed!
Electrostatic sensitive devices!

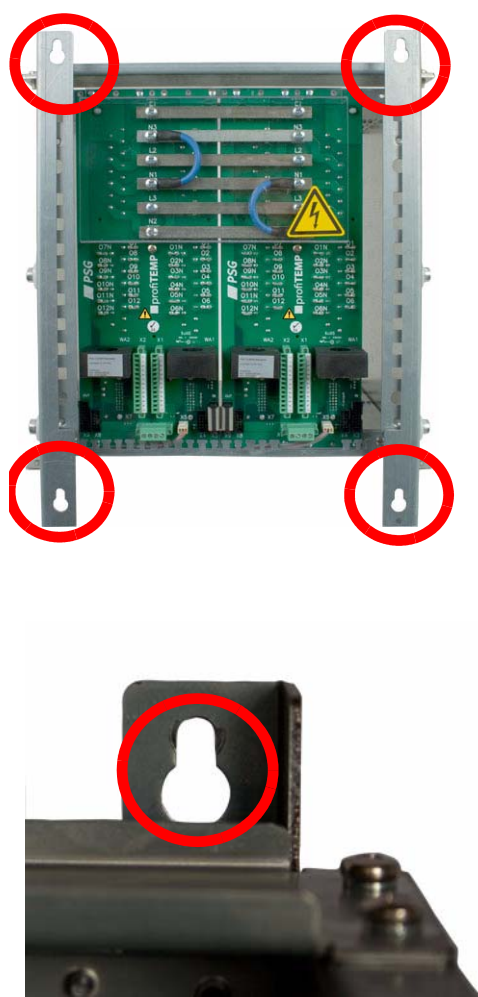
5.2 System profiTEMP pT-Rack Installation in cabinet

pT-Rack containing Control Unit pT-CUR and Controller Cards HCC 06/16/S.

 To use Not part of delivery	4 screws 4 washers	Screws e.g. M6 cylindric screws with hexagon socket based on DIN EN ISO 4762 or M5 lens screws with cross recessed based on DIN EN ISO 7045 or M5 hexagon screws based on DIN EN ISO 4017
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Installation	Fastening of pT-Rack (here type S (Swing) and/or Mini) with parts described under To use in control cabinet
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	For installation of pT-Rack in control cabinet these requirements DIN EN 61439-1:2012-06; VDE 0660-600-1:2012-06 DIN EN 50274 VDE 0660-514 must be observed by the installer of the system.
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Rear Side pT-Rack

Type plate
is located on this side

For example

	PSG Plastic Service GmbH D-68309 Mannheim Tel. 00 49 6217162 0	
Typ/type:	pT-Rack 08 S	
Artikelnr./article no.:	025330-08S	
Seriennr./serial no.:	1438209063	
Spannung/voltageAC:	400VAC Y (3~/N/PE)	
Anschluss/power:	max. 3 X 63A	

Detailed view





Outside dimensions and installation position pT-Rack see specifications chapter ↗profiTEMP pT-Rack - Rack system & Dummy boards (page 12)



The ventilation and/or air conditioning of the control cabinet is set up so that the ambient conditions of the components (see chapter ↗Technical Data (page 11)) must be maintained in continuous operation.



The type plate of pT-Rack is located on the right side of the pT-Rack frame top left.

5.3 Install cards / dummy boards

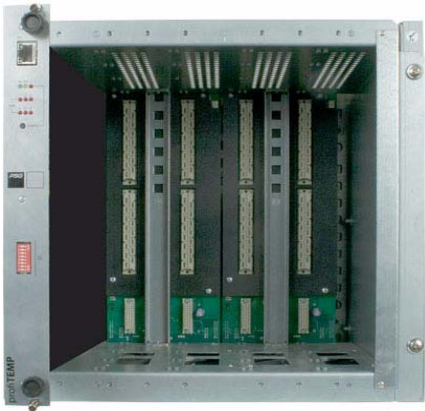
5.3.1 Card pT-CUR

Installation and wiring of card pT-CUR.

To use	Delivered card pT-CUR and insulating board	
--------	--	--

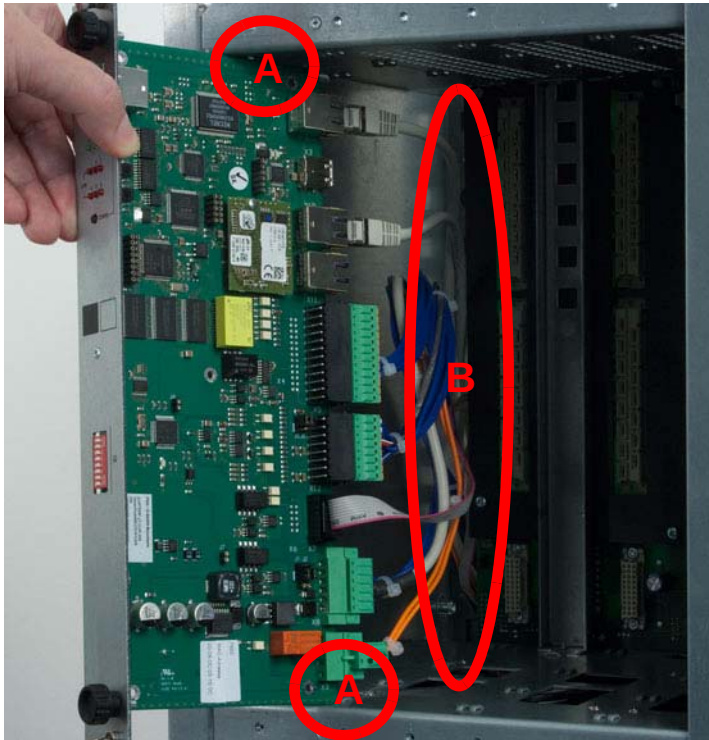
 To use Not part of delivery	■ Wiring of the delivered card pT-CUR according to the device specification (see order). Wiring of pT-CUR see chapter 7Connections / Interfaces (page 38). ■ Insulating board must be screwed with card pT-CUR. ■ The cable cross sections of all connecting cables must be installed, based on valid national standards of the installation location and according to the appropriate type of installation. Consider the maximum ambient temperature at selection of cables.
--	---

	The card pT-CUR may only be plugged/removed in de-energized status of System profiTEMP. The insulating board supplied must be connected to the card pT-CUR before plugging into the pT-Rack.
--	---



Front Side pT-Rack

Installation	pT-CUR
Plug the wired card pT-CUR into the left front side of pT-Rack	



Detailed view pT-CUR
Front Side pT-Rack

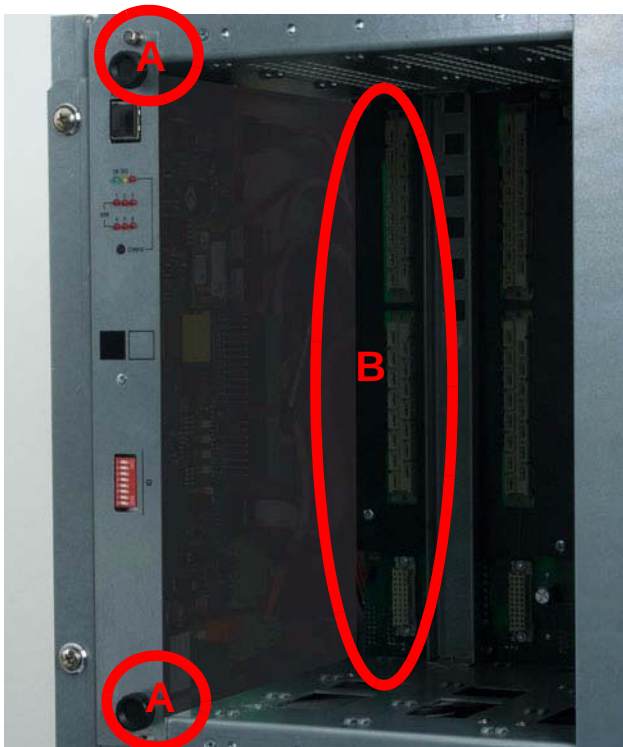
Installation pT-CUR

NOTE:

To make the connection cables more visible, the insulation board was removed in this view. Before fixing the card pT-CUR into pT-Rack it is necessarily to connect it to card pT-CUR again.

(A) Plug card pT-CUR into guide brackets top/bottom.

(B) Lead the connecting cables of pT-CUR gently through frame and Power Plane on the rear side of pT-Rack.



Detailed view pT-CUR
Front Side pT-Rack

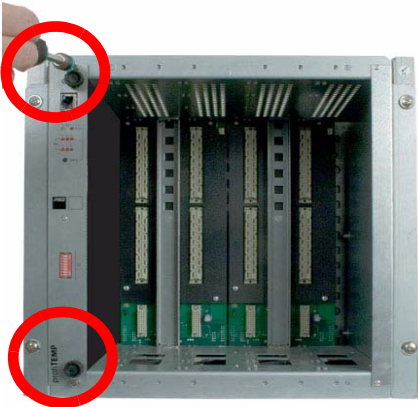
Installation pT-CUR

NOTE:

In this view the insulating board is screwed with card pT-CUR.

(A) Move card pT-CUR into guide brackets top/bottom until the front panel fits with the frame.

(B) Always make sure, that the connecting cables of pT-CUR are not stuck between frame and Power Plane.



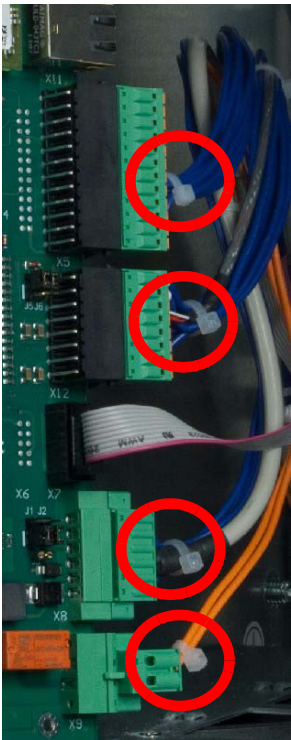
Front Side pT-Rack

Installation	pT-CUR
Lock card pT-CUR top/bottom.	



Strain relief
Do the plugs of pT-CUR have a screw lock, the plug must be tightened with the screws of the counter plug.
The cable lengths and the strain relief shall be designed such that terminals of the low voltage side (e.g. sensors, etc.) after loosening can not touch terminals / contacts of the power section and vice versa.

Detailed view pT-CUR



Strain relief
All cables of one plug of the pT-CUR must be tied together for each plug as close to the plug as possible ($\leq 15\text{ mm}$) with a cable tie ...

Detail view Rear Side pT-Rack



... and to be fastened to the cable fastening bar of the pT-Rack.



The type plate is located on the board



Procedure for service and/or maintenance, please refer to the chapter ↗Replace Control Unit Rack pT-CUR (page 74)

5.3.2 CAN-Bus

Connect CAN-Bus between pT-CUR and following Power Plane pT-PP-PCB#1, on the rear side of pT-Rack.



To use
Not part of delivery

10-pole ribbon cable

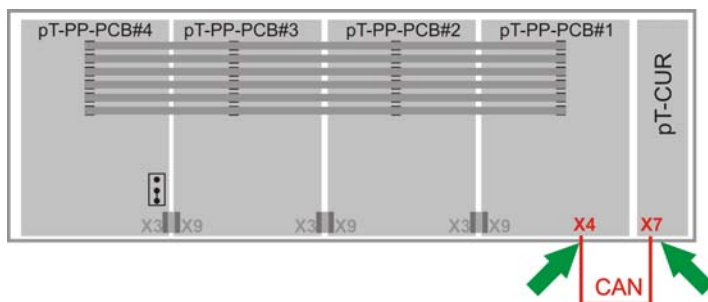


Installation of ribbon cable is only allowed in de-energized status of System profiTEMP.

Installation

CAN-Bus by 10-pole ribbon cable

- on the first Power Plane following pT-CUR [here pT-PP-PCB#1 X4]
 - on pT-CUR X7
- should be connected.



Rear Side pT-Rack

CAN-Bus

X4 pT-PP-PCB#1

X7 pT-CUR



CAN-Bus is terminated



Card pT-CUR is terminated by internal terminating resistor 120 Ohm.

Each pT-Rack is terminated on the last Power Plane [here pT-PP-PCB#4].



The CAN-Bus connection between the Controller Cards in the pT-Rack is done by plug X3/X9 on each Power Plane pT-PP-PCB.

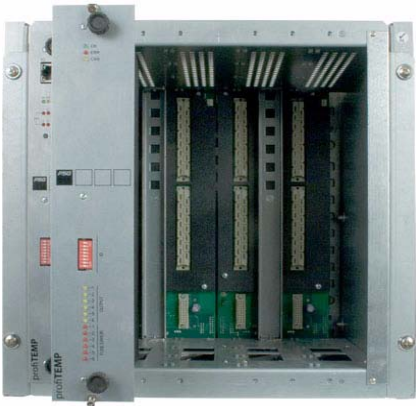
5.3.3 Controller card HCC 06/16/S

Install Controller Card HCC 06/16/S.

To use	Install delivered Controller Card HCC 06/16/S.	
--------	--	--

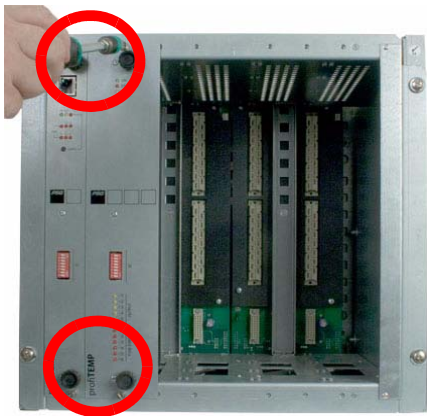


The card HCC 06/16/S may only be plugged/removed in de-energized status of System profi-TEMP.



Front Side pT-Rack

Installation	HCC 06/16/S
Plug Controller Card HCC 06/16/S (following pT-CUR) into the guide brackets top/bottom. Ensure that the connectors are latched in.	



Front Side pT-Rack

Installation	HCC 06/16/S
Lock card HCC 06/16/S top/bottom. Plug in and lock further Controller Cards HCC 06/16/S following right.	



The type plate is located on the board



Procedure for service and/or maintenance, please refer to the chapter ↗Hot Runner Controller Card HCC 06/16/S - Replace fuses (page 73), ↗Replace Hot Runner Controller Card HCC 06/16/S (page 74)

5.3.4 Dummy board

If one or more slots in the pT-Rack remain unused, these are to cover each with a suitable dummy board (see chapter 7 Consumable and Spare Parts (page 75)), which must be locked to the frame.



The pT-Rack should be on the front completely closed.

Unused slots must be covered with appropriate dummy boards that must be locked to the frame.



Front Side pT-Rack

Installation

HCC 06/16/S



Unused slots must be covered with appropriate dummy boards that must be locked to the frame.

5.4 Preliminaries for wiring of profiTEMP pT-Rack Type S (Swing) / Mini

After installation and fastening of all necessary cards and, if applicable, dummy boards (see chapter 7 Card pT-CUR (page 20), 7 Controller card HCC 06/16/S (page 24), 7 Dummy board (page 25)) wiring starts.

Remove the locking screws from the pT-Rack Type S (Swing) / Mini and swing the pT-Rack out.



In Control Cabinet

Solve and remove and save the 4 locking screws for the moveable part of the pT-Rack Type S (Swing) / Mini.



Before lowering the movable part of the pT-rack Type S (Swing) / Mini ensure that all cards / dummy boards are locked in the frame.



The pT-Rack Type S (Swing) / Mini may only be swung out in de-energized status of System profiTEMP.



Risk by moving parts.

Moving parts can pinch fingers. Keep fingers away from the side walls and the side frame or wear gloves, when moving the pT-rack Type S (Swing) / Mini. Move the pT-rack Type S (Swing) / Mini slowly and carefully in / out.



In Control Cabinet

Swing out moveable part of the pT-Rack Type S (Swing) / Mini.



In Control Cabinet

Bring moveable part of the pT-Rack Type S (Swing) / Mini in end position.

5.5 Connect power supply

5.5.1 Power supply electronics

Connect power supply for electronics (UEL) on the rear side of pT-Rack.



To use
Not part of delivery

- The power supply (at least 20-30 VDC (SELV / PELV) / 6.3 A / 150 W) is to build in near the pT-Rack.
- Power supply for electronics are not designed for operation on DC power supply.
- The connecting cable must be < 30 m long.
- The cable cross sections of all connecting cables must be installed, based on valid national standards of the installation location and according to the appropriate type of installation. Consider the maximum ambient temperature at selection of cables.

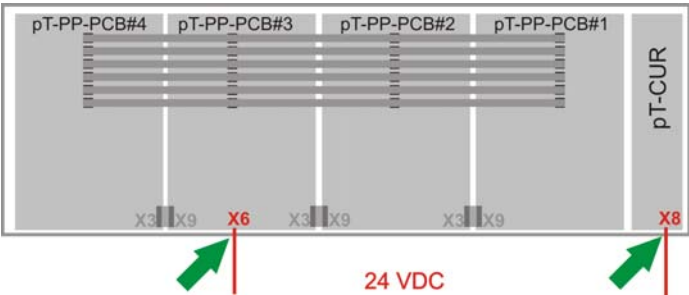


The power supply for electronics may only be connected in de-energized status of System pro-fiTEMP.

Installation

Connecting cable for power supply for electronics on the rear side of pT-Rack.

- on one of the central Power Plane [here pT-PP-PCB#3 X6|1 (U1) and X6|3 (0V1)]
- on pT-CUR X8|1 (+U) and X8|2 (0V) anschliessen.



Rear Side pT-Rack

Power supply for electronics

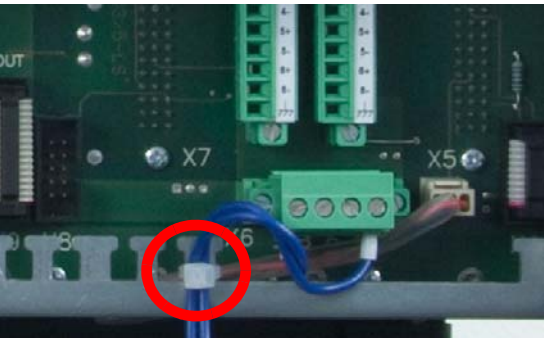
+U **X6|1** pT-PP-PCB
+U **X8|1** pT-CUR

0V **X6|3** pT-PP-PCB
0V **X8|2** pT-CUR



Strain relief

The cable lengths and the strain relief shall be designed such that terminals of the low voltage side (e.g. sensors, etc.) after loosening can not touch terminals / contacts of the power section and vice versa.



Detail view Power Supply
Electronics Rear Side pT-Rack



Strain relief

The connecting cables of the power supply for the electronics must be tied together with a cable tie and be fastened to the cable fastening bar of the pT-Rack.

The power supply for electronics by Power Plane is sufficient for a complete with Controller Cards equipped pT-Rack08. Per pT-Rack a power supply for electronics has to be used.

5.5.2 Mains voltage

Connect mains voltage on the rear side of pT-Rack.



When installing the system profiTEMP pT-Rack into a control cabinet, a separator for the mains voltage in the form of a switch or circuit breaker must be provided.

This separator must be arranged suitable and must be easily accessible for the user.

This separator must be marked so that it can be clearly identified belonging to the System profiTEMP pT-Rack and can be uniquely identified by the user.



To use
Not part of delivery

- Install an external fuse (3-pole breaker with characteristic B, see specification under power on ⚡Type plate (page 18), e.g. 63 A).

- The external fuse, maximal 3 x [see specification under power on ⚡Type plate (page 18)], must be configured based on valid national standards for used cable/power.

- The cable cross sections of all connecting cables must be installed, based on valid national standards of the installation location and according to the appropriate type of installation. Consider the maximum ambient temperature at selection of cables.



The mains voltage may only be connected in de-energized status of System profiTEMP.

Installation

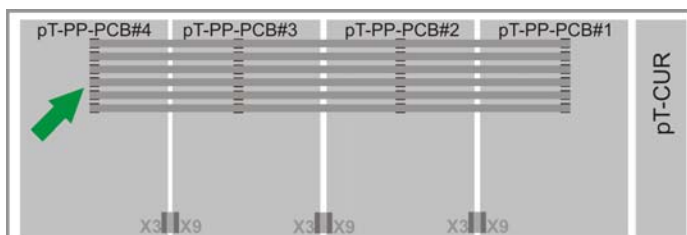
Solve and remove the screws for the acrylic glass covering carefully.

Connecting cables for mains voltage (phase L1, L2, L3; neutral conductor N) on the rear side of pT-Rack

- on line bar L1, L2, L3
- on line bar N

connect central.

After installation of the connecting cables, insert the acrylic glass covering carefully. Insert and tighten the screws of the acrylic glass covering.



Rear Side pT-Rack

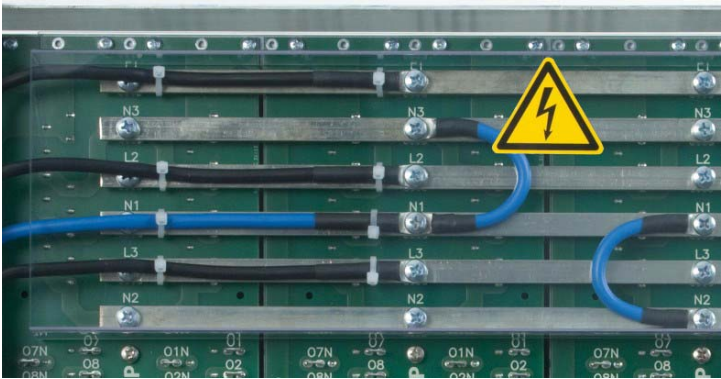
Connect **mains voltage** on

- **L1, L2, L3**
- and **N**

should be connected.



Pay attention to the safety instruction on the acrylic glass covering.



Detailed view Mains Voltage
Rear Side pT-Rack

Pre-assembled line bars

Torque for installation of power cords
bus/line bar distributor: 2 Nm.

Standard wiring
400VAC Y (3~/N/PE)
or
230 VAC Δ (3~/+/PE)



Strain relief

The cable lengths and the strain relief shall be designed such that terminals of the low voltage side (e.g. sensors, etc.) after loosening can not touch terminals / contacts of the power section and vice versa.



Detailed view Mains Voltage
Rear Side pT-Rack



Strain relief

The connecting cables of the mains voltage must be tied together with a cable tie and be fastened to the cable fastening bar of the pT-Rack.

5.5.3 Protective earthing

The pT-Rack must be grounded.



To use
Not part of delivery

- Connect the protective earthing based on valid national standards of the installation location.
- The cable cross sections of all connecting cables must be installed, based on valid national standards of the installation location and according to the appropriate type of installation. Consider the maximum ambient temperature at selection of cables.



The connection of the protective earthing shall be placed near the connection of the mains voltage.



Installation Protective earthing

Connect the protective earthing on the pT-Rack frame and the movable part on the with the earth symbol



marked bolt.

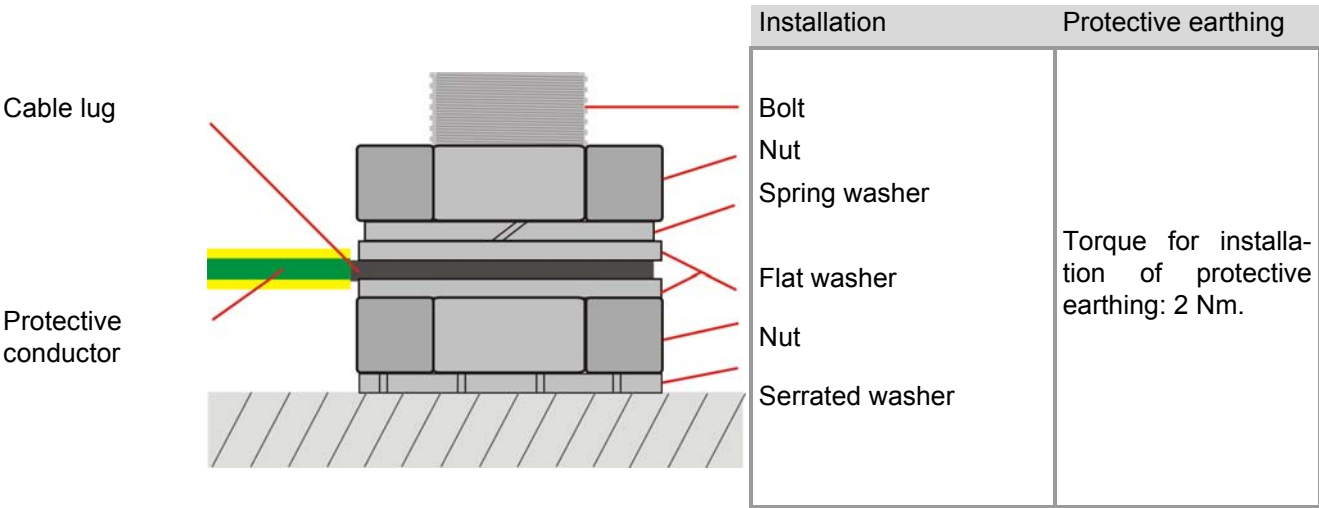
Rear Side pT-Rack

Installation Protective earthing

Ground pT-Rack frame and movable part by bolt.



Detailed view Protective Earthing
pT-Rack



Strain relief

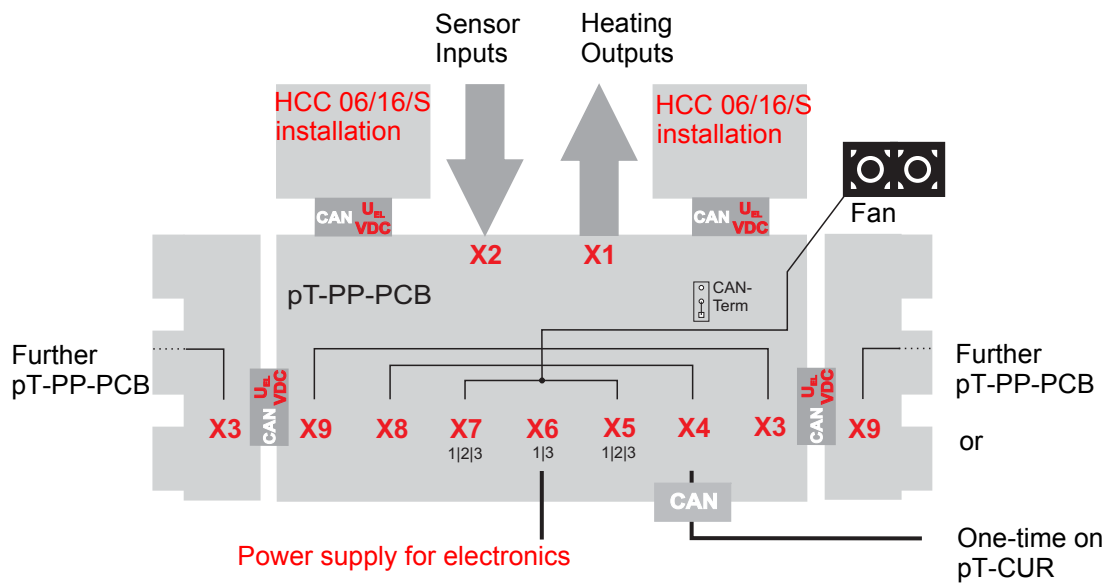
The protective conductor connection exists permanently. In case of damage, the protective conductor connection must interrupt last of all. The strain relief must be designed so that the protective conductor connection interrupts last under mechanical stress.

The cable lengths and the strain relief shall be designed such that terminals of the low voltage side (e.g. sensors, etc.) after loosening can not touch terminals / contacts of the power section and vice versa.

5.6 Connection sensors / heating

In the pT-Racks so called Power Planes pT-PP-PCB are already installed. The Power Planes have the following connections / the following function.

- Slot for 2 Controller Cards HCC 06/16/S
- Connection mains voltage by bus/line bar (pre-assembled)
- Connection for electronics
- CAN-Bus distribution and termination
- Connection sensor inputs
- Connections heating outputs
- Connection of fan (pre-assembled)
- etc.



Schematic presentation Power Plane pT-PP-PCB

5.6.1 Connecting cable sensor

Each Power Plane pT-PP-PCB has slots for 2 Controller Cards HCC 06/16/S. Therefore 2*6 Sensor inputs can be connected on the rear side of the Power Plane.



To use
Not part of delivery

The connecting cable (sensor) must be < 30 m long.
The connecting cable (sensor) must be shielded.
Cables must have a wire end ferrule for connection to screw terminal.

Internal reference junction
When using the present reference junction (Standard), on the power plane pT-PP-PCB, the connection of the sensor is made with an appropriate compensating cable of the corresponding thermocouple (observe polarity).

External reference junction
When using an external reference junction, which is located at the terminal point of the compensating cable on Controller Unit pT-CUR, use copper (CU) wires with a minimum cross section of 0.25 mm² and shielding.



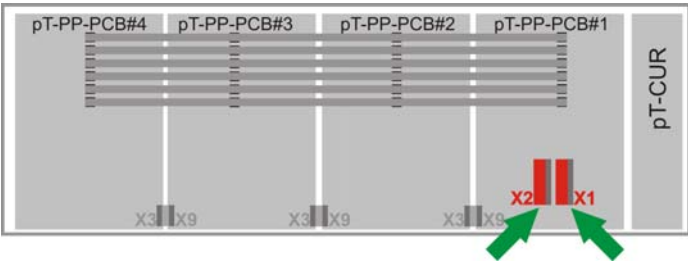
The connecting cables for sensors may only be connected in de-energized status of System profitEMP.

Installation

Sensor on Power Plane pt-PP-PCB#* X1,
Sensor on Power Plane pt-PP-PCB#* X2,
etc. installation.



The zones are consecutively numbered (1...250_{dec}) due to the setting of the DIP switch (1...127_{dec}) on the Controller Card HCC 06/16/S. See chapter ↗Setup (page 51).



Rear Side pT-Rack

Connecting cables sensor

on terminal **X1 and/or X2** per Power Plane pT-PP-PCB.



Strain relief
The cable lengths and the strain relief shall be designed such that terminals of the low voltage side (e.g. sensors, etc.) after loosening can not touch terminals / contacts of the power section and vice versa.



Pin	X1	X2
1	1+	1+
2	1-	1-
3	2+	2+
4	2-	2-
5	3+	3+
6	3-	3-
7	4+	4+
8	4-	4-
9	5+	5+
10	5-	5-
11	6+	6+
12	6-	6-
13	HF	HF

Detail view Connecting Cable Sensor
Rear Side pT-Rack



Strain relief

The connecting cables of the Heating of one HCC 06/16/S card must be tied together with a cable tie and be fastened to the cable fastening bar of the pT-Rack.



Shielding

The shielding of the sensor cables is tied together to the cable fastening bar of the pT-Rack.

To shield the terminals X1|X2 pin 13 can be used. Hold the cable for shielding as short as possible.

5.6.2 Connecting cable Heating

Each Power Plane pT-PP-PCB has slots for 2 Controller Cards HCC 06/16/S. Therefore 2*6 Heating inputs can be connected on the Power Plane.



To use
Not part of delivery

- The cable cross sections of all connecting cables must be installed, based on valid national standards of the installation location and according to the appropriate type of installation. Consider the maximum ambient temperature at selection of cables.
- Cable with quick-connect receptacle 6.3 / 0.8; fully insulated for connection to Faston flat-cable plug

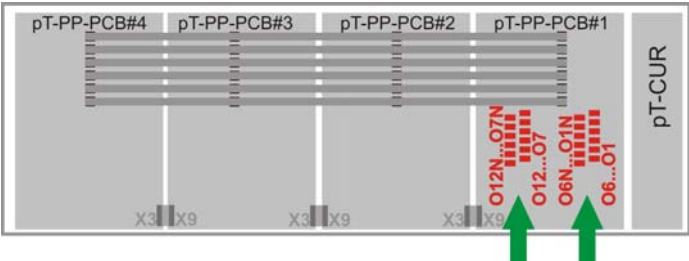


The connecting cables for Heating may only be connected in de-energized status of System pro-fiTEMP.

Installation	Connecting cable Heating on Power Plane pT-PP-PCB#* O1-O6, O1N-O6N, Connecting cable Heating on Power Plane pT-PP-PCB#* O7-O12, O7N-O12N, etc. installation.
--------------	--



The zones are consecutively numbered (1...250_{dec}) due to the setting of the DIP switch (1...127_{dec}) on the Controller Card HCC 06/16/S. See chapter 7Setup (page 51).



Rear Side pT-Rack

Connecting cables Heating

on Faston flat-cable plug **O1-O6, O1N-O6N and/or O7-O12, O7N-O12N** per Power Plane pT-PP-PCB.



Strain relief
The cable lengths and the strain relief shall be designed such that terminals of the low voltage side (e.g. sensors, etc.) after loosening can not touch terminals / contacts of the power section and vice versa.



Pay attention to the safety instruction on circuit board.



Heating output 6 zones	Heating output 6 zones	
O1	O7	Switching output 1
O1N	O7N	Neutral conductor 1
O2	O8	Switching output 2
O2N	O8N	Neutral conductor 2
O3	O9	Switching output 3
O3N	O9N	Neutral conductor 3
O4	O10	Switching output 4
O4N	O10N	Neutral conductor 4
O5	O11	Switching output 5
O5N	O11N	Neutral conductor 5
O6	O12	Switching output 6
O6N	O12N	Neutral conductor 6

Detail view Connecting Cable Heating
Rear Side pT-Rack



All phases and neutral conductors have to be led through the corresponding differential current transformer on the Power Plane.



Detail view Connecting Cable Heating
Rear Side pT-Rack



The connecting cables of the Heating of one HCC 06/16/S card must be tied together with a cable tie above the flat-cable plug, as seen here.



Strain relief

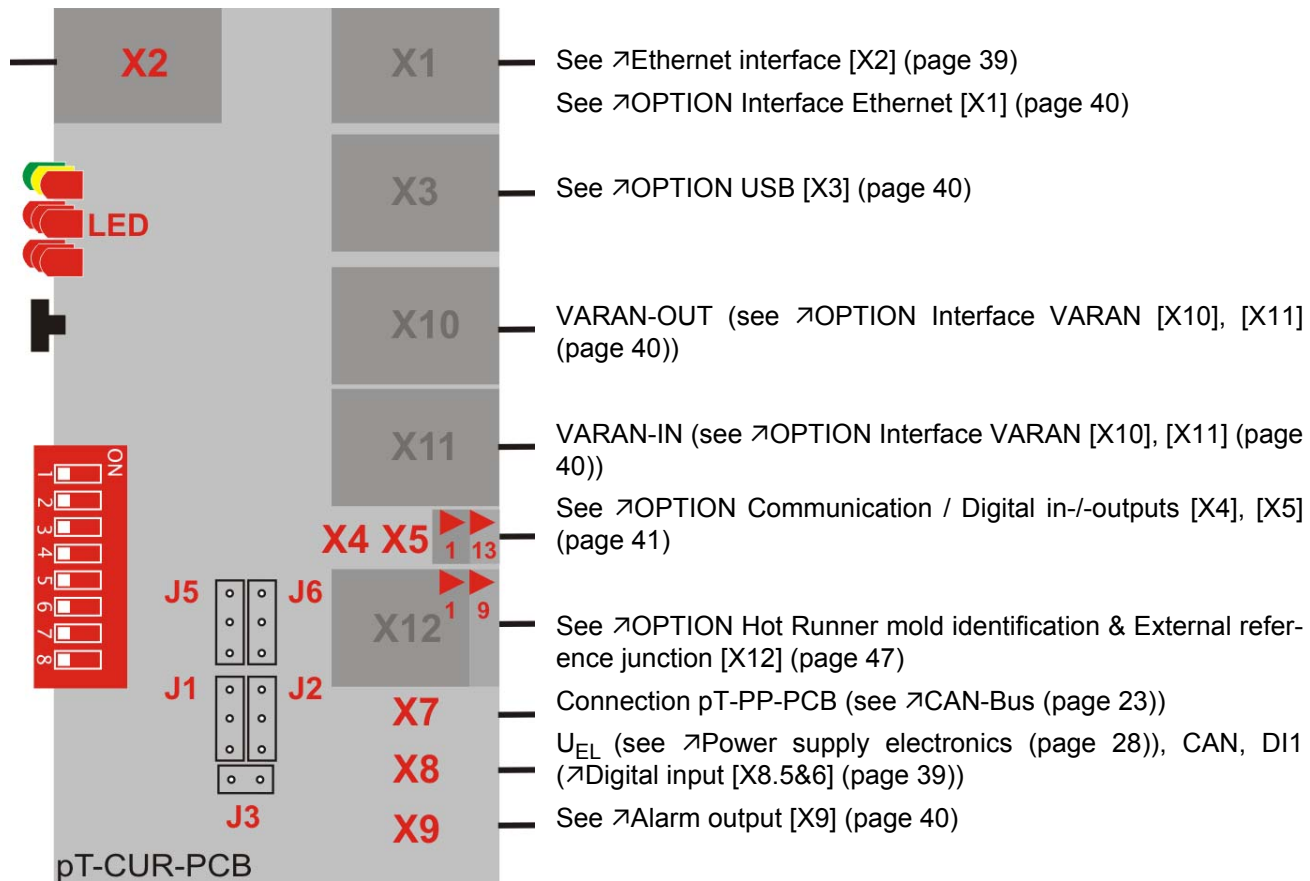
The connecting cables of the Heating of one HCC 06/16/S card must be tied together with a cable tie and be fastened to the cable fastening bar of the pT-Rack.

6 Connections / Interfaces

The Control Unit pT-CUR has connections and/or interfaces for

- Coordination of functions between the controllers
- Interface between control / visualization and the controllers
- IO module for digital and analog inputs

. In some cases, a configuration of the connections and/or interfaces must be made, what is described in the individual connections and/or interfaces.



Connection overview Control Unit pT-CUR



↗Security References (page 5) For notes pay attention to chapter ↗System Configuration (page 16)!



Appropriate power supply cord see chapter ↗profiTEMP Control Unit Rack pT-CUR (page 14)

6.1 Ethernet interface [X2]

The Ethernet interface establishes a connection between Control Unit pT-CUR and a remote PC in one network by Ethernet TCP/IP (RJ45-socket).

Are the networks not compatible with each other, remote maintenance can be done by VPN. A routing-IP must be specified.

All configuration can be done by the project planning and configuration tool flexotempMANAGER installed on the remote PC, with which the Control Unit pT-CUR can also be remote controlled.



Operation

Information on this topic are in the operating instructions

Project Setup - and Configuration Tool flexotempMANAGER Operation.

6.2 Digital input [X8.5&6]

Digital input 1: 0...30 VDC, Low level 0...1 VDC, High level 4...30 VDC; $I_{\max} = 12 \text{ mA}$ at 30 VDC

(X4.26, X5.17 same signal as X8.5)

X8		
Power supply electronics, Interface CANopen, Digital input 1		
6-pole spring-force terminal		
Pin	Function and/or signal	
1	+U	Power supply
2	0 V	Ground power supply
3	C-H	CAN-H
4	C-L	CAN-L
5	D1	Digital input 1
6	0VD	Ground digital input 1

See ↗Power supply electronics (page 28)

= X4.26 = X5.17

= X4.22 = X5.16

Digital input	X8 Pin 1	+U
	X8 PIN 5	D1

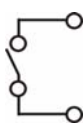


Configuration by Project Setup and Configuration Tool flexotempMANAGER

System parameter Inputs IP01	[1] Standby high (Standard setting)
------------------------------	-------------------------------------

6.3 Alarm output [X9]

Alarm output potential-free relay contact (2-pole spring-force terminal) 250 VAC / 1 A

X9	Alarm output	
2-pole spring-force terminal		
Pin	Function and/or signal	
1	13	
2	14	

6.4 OPTION Interface VARAN [X10], [X11]

Ordered variant: **VARAN**

The VARAN implementation in the Control Unit pT CUR (RJ45 socket) provides users with a real-time Ethernet bus system with all its advantages for machine automation.

To build a VARAN bus line structure, the interface VARAN OUT [X10] is used.

6.5 OPTION Interface Ethernet [X1]

Ordered variant: **HUB**

The other Ethernet interface enables beside ↗Ethernet interface [X2] (page 39) a simultaneous connection e.g. of a Touch panel by Ethernet TCP/IP (RJ45 socket). As Touch panel TEMP-Touch can be used with the hot runner controller operation software **TEMPSoft2**.

6.6 OPTION USB [X3]

Ordered variant: **USB**

Data im-/export can be done by the USB port.

The USB stick can be controlled by code numbers send by a superior control system. 10 programs can be stored on / loaded from USB stick. A program means a data set with all parameters of all zones of a hot runner controller. Export of a service file is planned. In the service file are important characteristics and data of the hot runner controller saved, which help in error analysis. In the case of service, export service file from the hot runner controller on USB stick and transfer it to manufacturer/supplier.

6.7 OPTION Communication / Digital in-/outputs [X4], [X5]

By X4/X5 are 4 digital inputs and 4 digital outputs are available, and for communication exists a serial data interface RS232/RS485.

Digital input 1-4: 0...30 VDC, Low level 0...1 VDC, High level 4...30 VDC; $I_{\max} = 12 \text{ mA}$ at 30 VDC

Digital output 1-4: 10...30 VDC, 100 mA at $T_a=25^\circ\text{C}$

(X4.26, X5.17 same signal as X8.5)

6.7.1 OPTION Digital in-/ outputs [X4]

Ordered variant: IOF

X4	Communication, Digital inputs 1-4 / Digital outputs 1-4		
26-pole ribbon cable (socket)			
Pin	Function and/or signal		
1	0V _{ext}	=X8.2	
2	0V _{ext}	=X8.2	
3	U _{EL/ext}	=X8.1	
4	ADR _{OUT2}	ADR-OUT2	
5	C2-L	CAN2-L	
6	C2-H	CAN2-H	
7	ADR _{OUT1}	ADR-OUT1	
8	C1-L	CAN1-L	
9	C1-H	CAN1-H	
10	0V _{SIO}	RS485	
11	RXD	RS485	
12	TXD	RS485	
13	RX-	RS422	
14	RX+	RS422	
15	TX-	RS422	
16	TX+	RS422	
17	U _{EL/O*}	Power supply O*	
18	O4	Digital output 4	
19	O3	Digital output 3	
20	O2	Digital output 2	
21	O1	Digital output 1	
22	0V _{I*}	Ground power supply I*	= X8.6
23	I4	Digital input 4	
24	I3	Digital input 3	
25	I2	Digital input 2	
26	I1	Digital input 1	= X8.5

Digital input	X4 Pin 26/25/24/ 23	I*
	X4 PIN 3 17*	U _{EL}

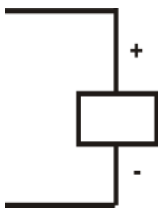


* When external auxiliary voltage U_{EL} on X4.17

Configuration by Project Setup and Configuration Tool flexotempMANAGER

System parameter Inputs IP01	[1] Standby high (Standard setting)
System parameter Inputs IP02	[3] Boost high (Standard setting)
System parameter Inputs IP03	[5] Zone passive high (Standard setting)
System parameter Inputs IP04	[9] Input block high (Standard setting)

Digital output	X4 PIN 21/20/19/ 18	O*
	X4 PIN 1 2 22*	0 V



* When external auxiliary voltage 0V on X4.22

Configuration by Project Setup and Configuration Tool flexotempMANAGER

System parameter Outputs OP01	0x0423F0FD (Standard setting)
System parameter Outputs OP02	0x0423F0FD (Standard setting)
System parameter Outputs OP03	0x0423F0FC (Standard setting)
System parameter Outputs OP04	0x00000000 (Standard setting)

6.7.2 OPTION Communication [X4]

Ordered variant: IOF

X4		Communication, Digital inputs 1-4 / Digital outputs 1-4	
26-pole ribbon cable (socket)			
Pin	Function and/or signal		
1	0V _{ext}	=X8.2	
2	0V _{ext}	=X8.2	
3	U _{EL/ext}	=X8.1	
4	ADR _{OUT2}	ADR-OUT2	
5	C2-L	CAN2-L	
6	C2-H	CAN2-H	
7	ADR _{OUT1}	ADR-OUT1	
8	C1-L	CAN1-L	
9	C1-H	CAN1-H	
10	0V _{SIO}	RS485	
11	RXD	RS485	
12	TXD	RS485	
13	RX-	RS422	
14	RX+	RS422	
15	TX-	RS422	
16	TX+	RS422	
17	U _{EL/O*}	Power supply O*	
18	O4	Digital output 4	
19	O3	Digital output 3	
20	O2	Digital output 2	
21	O1	Digital output 1	
22	0V _{I*}	Ground power supply I*	= X8.6
23	I4	Digital input 4	
24	I3	Digital input 3	
25	I2	Digital input 2	= X8.5
26	I1	Digital input 1	

RS485

PIN	X4	
10	0V _{SIO}	Galvanically isolated (U _{EL}).
11	RxD-V24	
12	TxD-V24	
13	n.a.	Only for purpose of configuration.
14	n.a.	
15	n.a.	
16	n.a.	

RS422

PIN	X4	
10	n.a.	Galvanically isolated.
11	n.a.	
12	n.a.	
13	RX-	In the case of 2-wire operation: Connect Pin 13 and 15, as well as Pin 14 and 16.
14	RX+	
15	TX-	
16	TX+	

6.7.3 OPTION Digital in-/ outputs [X5]

Ordered variant: IOK

X5		Communication, Digital inputs 1-4 / Digital outputs 1-4
2*12-pole spring-force terminal		
Pin	Function and/or signal	
1	C1-H	CAN1-H
2	C1-L	CAN1-L
3	C2-H	CAN2-H
4	C2-L	CAN2-L
5	TX+	RS422
6	TX-	RS422
7	RX+	RS422
8	RX-	RS422
9	TXD	RS485
10	RXD	RS485
11	0V _{SIO}	RS485
12		n.a.
13	U1	=X8.1
14	U2	Power supply O*
15	0V1	=X8.2
16	0V2	Ground power supply I*
17	I1	Digital input 1
18	I2	Digital input 2
19	I3	Digital input 3
20	I4	Digital input 4
21	O1	Digital output 1
22	O2	Digital output 2
23	O3	Digital output 3
24	O4	Digital output 4

= X8.6
= X8.5

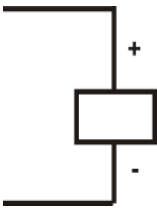
Digital input	X5 Pin 17,18,19, 20	I*
	X5 PIN 13 14*	U _{EL}



* When external auxiliary voltage U_{EL} on X5.14

Configuration by Project Setup and Configuration Tool flexotempMANAGER	
System parameter Inputs IP01	[1] Standby high (Standard setting)
System parameter Inputs IP02	[3] Boost high (Standard setting)
System parameter Inputs IP03	[5] Zone passive high (Standard setting)
System parameter Inputs IP04	[9] Input block high (Standard setting)

Digital output	X5 PIN 21/22/23/ 24	O*
	X5 PIN 15 16*	0 V



* When external auxiliary voltage 0V on X5.16

Configuration by Project Setup and Configuration Tool flexotempMANAGER	
System parameter Outputs OP01	0x0423F0FD (Standard setting)
System parameter Outputs OP02	0x0423F0FD (Standard setting)
System parameter Outputs OP03	0x0423F0FC (Standard setting)
System parameter Outputs OP04	0x00000000 (Standard setting)

6.7.4 OPTION Communication [X5]

Ordered variant: IOK

X5	Communication, Digital inputs 1-4 / Digital outputs 1-4	
2*12-pole spring-force terminal		
Pin	Function and/or signal	
1	C1-H	CAN1-H
2	C1-L	CAN1-L
3	C2-H	CAN2-H
4	C2-L	CAN2-L
5	TX+	RS422
6	TX-	RS422
7	RX+	RS422
8	RX-	RS422
9	TXD	RS485
10	RXD	RS485
11	0V _{SIO}	RS485
12		n.a.
13	U1	=X8.1
14	U2	Power supply O*
15	0V1	=X8.2
16	0V2	Ground power supply I*
17	I1	Digital input 1
18	I2	Digital input 2
19	I3	Digital input 3
20	I4	Digital input 4
21	O1	Digital output 1
22	O2	Digital output 2
23	O3	Digital output 3
24	O4	Digital output 4

= X8.6

= X8.5

RS485		Galvanically isolated (U _{EL}). Only for purpose of configuration.	RS422		Galvanically isolated. 2/4-wire. In the case of 2-wire operation: Connect Pin 5 and 7, as well as Pin 6 and 8.
PIN	X5		PIN	X5	
5	n.a.		5	TX+	
6	n.a.		6	TX-	
7	n.a.		7	RX+	
8	n.a.		8	RX-	
9	TxD-V24		9	n.a.	
10	RxD-V24		10	n.a.	
11	0V _{SIO}		11	n.a.	

6.8 OPTION Hot Runner mold identification & External reference junction [X12]

6.8.1 OPTION Hot Runner mold identification [X12]

Ordered variant: **WKZ**

Prerequisite: By the Ethernet interface (X1) a PC with installed PSG own PC software (project setup and configuration tool flexotempMANAGER or operation software **TEMPSoft2**) is connected via Ethernet TCP/IP (RJ45-socket).



Information on this topic are in the
Operating Instructions TEMPSoft2.

A Hot Runner mold identification is available for **TEMPSoft2**. An e.g. injection mold with Hot Runner mold identification shares encoding information with TEMPSoft2 via the digital inputs of Control Unit pT-CUR.

In the tool data in **TEMPSoft2** the tool coding is specified. A program and a view can be assigned, which are used after identification of the tool.

The Hot Runner mold identification in **TEMPSoft2** handles 16 Bits.

As digital inputs I1 - I4 of X4|X5 (changes in standard configuration necessary) and I5 - I12 of X12 (standard setting) can be used. Should 16 bits be used for Hot Runner mold identification, further modules have to be connected.

Output voltage X12 at Hot Runner mold identification

As standard setting the output voltage of Hot Runner mold identification is identical with the power supply on terminal X8. Should the digital inputs be supplied by another power supply, replug the jumpers J5/J6 and connect an auxiliary power supply.

PIN	J5	J6	Function and/or signal
1> 2 3			J5 = X4.17/X5.14 J6 = X8.6
1> 2 3			J5 = X8.1 J6 = X8.2 (Standard setting)

X12	Hot Runner mold identification, External reference junction	
2*8-pole spring-force terminal		
Pin	Function and/or signal	
1	+U	=X4.17/X5.14 or X8.1 _{Standard *)}
2	0 V	=X8.6 or X8.2 _{Standard *)}
3	1+	External reference junction 1
4	1-	
5	1	
6	2+	External reference junction 2
7	2-	
8	2	

9	I5	Digital input 5
10	I6	Digital input 6
11	I7	Digital input 7
12	I8	Digital input 8
13	I9	Digital input 9
14	I10	Digital input 10
15	I11	Digital input 11
16	I12	Digital input 12

*) See Jumper J5/J6

Hot Runner mold identification (digital input)	X12 Pin 9, 10, 11, 12, 13, 14, 15, 16	I*
	X12 PIN 1	U _{EL}



Connect external auxiliary voltage U_{EL} to X4.17/X5.14, when jumper J5/J6 is NOT in standard setting.

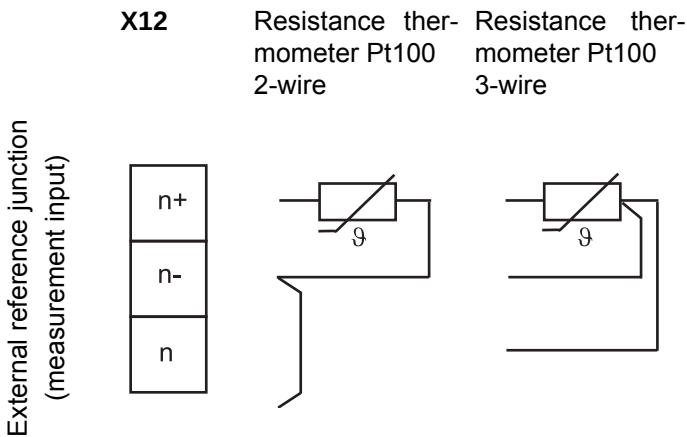
Configuration by Project Setup and Configuration Tool flexotempMANAGER	
System parameter Inputs IP05	[11] Tool coding high (Standard setting)
System parameter Inputs IP06	[11] Tool coding high (Standard setting)
System parameter Inputs IP07	[11] Tool coding high (Standard setting)
System parameter Inputs IP08	[11] Tool coding high (Standard setting)
System parameter Inputs IP09	[11] Tool coding high (Standard setting)
System parameter Inputs IP10	[11] Tool coding high (Standard setting)
System parameter Inputs IP11	[11] Tool coding high (Standard setting)
System parameter Inputs IP12	[11] Tool coding high (Standard setting)

6.8.2 OPTION External reference junction [X12]

Ordered variant: **WKZ**

When using thermocouples for temperature measurement, great care is required in order to achieve accurate results. Is it necessary for design or safety reasons, to arrange the reference junction in a greater distance from the measuring point, an external reference junction is used.

X12 Hot Runner mold identification, External reference junction		
2*8-pole spring-force terminal		
Pin	Function and/or signal	
1	+U	=X4.17/X5.14 or X8.1
2	0 V	=X8.6 or X8.2
3	1+	External reference junction 1
4	1-	
5	1	
6	2+	External reference junction 2
7	2-	
8	2	
9	I5	Digital input 5
10	I6	Digital input 6
11	I7	Digital input 7
12	I8	Digital input 8
13	I9	Digital input 9
14	I10	Digital input 10
15	I11	Digital input 11
16	I12	Digital input 12



Configuration by Project Setup and Configuration Tool flexotempMANAGER	
Zone parameter P040	[3]...5 ...(External reference junction), dependent of sensor type
HCC 06/16/S Parameter Zone parameter AI*	[3]...5 (same sensor type as for zone parameter P040)

HCC 06/16/S Parameter System parameter External reference junction Component	Assign component to PT_WKZ
HCC 06/16/S Parameter System parameter External reference junction Input	Assign Input AI1 and/or Input AI 2

7 Setup

After system rebuild and/or

- replacing
- adding
- removing

of single components, a setup must be executed. This means, that where necessary

- DIP switch settings must be executed
- an address scan is triggered (to determine the system configuration; by key CONFIG or by code number (from Project Setup and Configuration Tool flexotempMANAGER or external PLC))
- parameters must be set (when different from default setting)

werden muss/müssen.

Generally applies:

- The address is binary coded and can be set between 1...127_{dec} by DIP switch.
- The address must be unique for System profiTEMP
- Gaps in the CAN address setting by DIP switch are feasible. After setup the zones are numbered consecutively without gaps.

The following exceptions apply when setting the CAN address.



Only HCC 06/16/S card

DIP switch 8 set to ON in combination with any DIP switch setting is equivalent to CAN address 127_{dec}

Standard setting device ID



Only pT-CUR

Device ID = DEFAULT (all DIP switches set to ON) resulting
IP = 192.168.0.220.

When the Control Unit pT-CUR is connected by interface, an interface specific base part (address: CP01 / NodeID: CP06 / IP: CP09-CP12) can be added to the address/NodeID/IP.



**Activate
setup**

...by Project Setup and Configuration Tool flexotempMANAGER

Show context menu by using the secondary mouse key in the project planning and configuration tool flexotempMANAGER and select menu item <Start address scan>

(Is there still no component created, see Project Setup and Configuration Tool flexotempMANAGER Operation - chapter Create projects)

...by code number from external PLC

...by key CONFIG on Controller Unit pT-CUR

Press the key CONFIG on the Controller Unit pT-CUR as long (ca. 3-5 sec) as the LED CONFIG starts flashing (address scan is running).

The LED CONFIG flashes as long as an address scan is running.

The LED CONFIG stops flashing when the address scan is completed, which can last up to several minutes.

	Operation	Information on this topic are in the operating instructions Project Setup - and Configuration Tool flexotempMANAGER Operation .
	Parameters	Information on this topic are in the parameter description Parameter Hot Runner Controller profiTEMP.

7.1 at system rebuild

See chapter ↗System Configuration (page 16).

DIP switch setting	Execute and/or check DIP switch setting (1...127 _{dec}) for single Controller Cards HCC 06/16/S.
Activate address scan / determination of system configuration	A setup on the Controller Unit pT-CUR (see ↗Activate setup (page 51)) reads the addresses set for the Controller Cards HCC 06/16/S and determines the system configuration.
Set parameters	Set parameters by project planning and configuration tool flexotempMANAGER or by own control system.

7.2 at replacement of Controller Card HCC 06/16/S (DIP switch <= 0)

Here a Controller Card HCC 06/16/S is replaced by a equivalent spare Controller Card HCC 06/16/S. The CAN address set for the original Controller Card HCC 06/16/S must be set for the spare Controller Card HCC 06/16/S.

DIP switch setting	Take the DIP switch setting (1...127 _{dec}) of the removed Controller Card HCC 06/16/S for the spare Controller Card HCC 06/16/S.
Activate address scan / determination of system configuration	NOT required!
Set parameters	NOT required! (The Control Unit pT-CUR has stored the specified parameters and loads them into the spare Controller Card HCC 06/16/S)

7.3 at replacement of Controller Unit pT-CUR

Here a Control Unit pT-CUR is replaced by a equivalent spare Control Unit pT-CUR.

DIP switch setting	Take the DIP switch setting of the removed pT-CUR for the spare pT-CUR.
Activate address scan / determination of system configuration	A setup on the Controller Unit pT-CUR (see ↗Activate setup (page 51)) reads the addresses set for the Controller Cards HCC 06/16/S and determines the system configuration.
Set parameters	Set parameters by project planning and configuration tool flexotempMANAGER or by own control system.

7.4 at adding of Controller Card HCC 06/16/S (higher DIP switch setting)

Here a Controller Card HCC 06/16/S is added „after“ the already existing Controller Cards HCC 06/16/S, i.e. a higher DIP switch setting must be set, than already used DIP switch settings.

DIP switch setting	Execute DIP switch setting (1...127 _{dec}) for Controller Card HCC 06/16/S. DIP switch setting higher, as already used DIP switch settings.
Activate address scan / determination of system configuration	A setup on the Controller Unit pT-CUR (see ↗Activate setup (page 51)) reads the addresses set for the Controller Cards HCC 06/16/S and determines the system configuration.
Set parameters	Check specification of parameters for the new zones by project planning and configuration tool flexotempMANAGER or adjust the number of zones by own control system.

7.5 at removing of Controller Card HCC 06/16/S (highest DIP switch setting)

Here the Controller Card HCC 06/16/S with the highest DIP switch setting is removed.

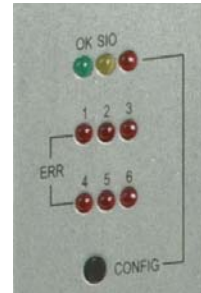
DIP switch setting	Remove the Controller Card HCC with the highest DIP switch setting
Activate address scan / determination of system configuration	A setup on the Controller Unit pT-CUR (see ↗Activate setup (page 51)) reads the addresses set for the Controller Cards HCC 06/16/S and determines the system configuration.
Set parameters	The zones for the removed Controller Card HCC 06/16/S were omitted by project planning and configuration tool flexotempMANAGER or adjust the number of zones by own control system.

8 Status display - Trouble Shooting

8.1 Status display overview

On the card pT-CUR are 9 LED's available.

The status of System profiTEMP can be identified by the blink code.



LED	Function / signal	Flashing 4 Hz	Continuous light	Blink code 2	Flashing 2 Hz
OK		In monitor mode	Project setup OK / All Slaves OK / Project setup running	Project setup stopped	Slave missing / slave does not respond
SIO	Communication (CAN/SIO)				
CONFIG	Flashing during address scan				

Explanation blink code

Highest Priority	Blink code 1	Blink code 2	Decreasing Priority etc.
	 LED switch-on 1 time, thereafter pause; repeat	 LED switch-on 2 time, thereafter pause; repeat	

		Blink code 1	Blink code 2	Blink code 3	Blink code 4	Blink code 5
ERR1	Error in project set-up/slaves	↗Time out error / slave does not respond (page 60)	↗Timeout NodeGuarding (page 60)	↗Incorrect slave type in project setup (page 61)		
ERR2	Error heating	↗Phase-fuse-error (page 62)	↗Residual current (page 62)	↗Current Alarm (page 63)	↗Thyristor alarm (page 63)	↗Total breakdown of heater (page 64)
ERR3	Sensor error	↗Potential error (page 65)	↗Sensor break (page 66)	↗Sensor incorrect polarity (page 66)	↗Sensor alarm (page 67)	
ERR4	Data fault	↗Channel data error pT-CUR (page 68)	↗Channel data error slave (page 68)	↗System data error pT-Cur (page 69)	↗System data error slave (page 69)	
ERR5	Other errors	↗Heater alarm (page 70)				
ERR6	Actuator deactivated	↗pt-CUR on „OUT“ (page 71)	↗Actuator deactivated (page 71)			

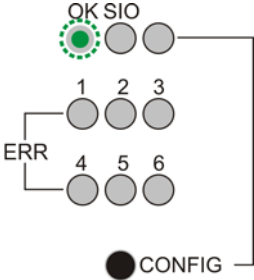
In Project Setup and Configuration Tool flexotempMANAGER the status is shown too.

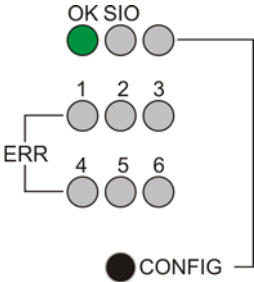
	Operation	Information on this topic are in the operating instructions Project Setup - and Configuration Tool flexotempMANAGER Operation .
	Parameters	Information on this topic are in the parameter description Parameter Hot Runner Controller profiTEMP.

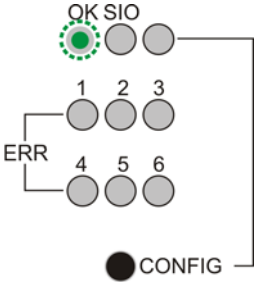
8.2 Trouble Shooting

 This symbol indicates that everything is in OK.

8.2.1 Status display OK-LED

Function and/or signal	pT-CUR	HCC 06/16/S
Flashing 4 Hz In monitor mode		 OK ERR CAN Flashing 2 Hz pT-CUR runs or pT-CUR without firmware. HCC 06/16/S in pre-operational mode.

Function and/or signal	pT-CUR	HCC 06/16/S
Continuous light Project setup OK / All Slaves OK / Project setup running		 OK ERR CAN 

Function and/or signal	pT-CUR	HCC 06/16/S
Blink code 2 Project setup stopped		 OK ERR CAN Flashing 2 Hz No processing, no communication, no control, etc. by pT-CUR. HCC 06/16/S after a certain time in pre-operational mode.

Function and/or signal	pT-CUR	HCC 06/16/S
------------------------	--------	-------------

Flashing 2 Hz

Slave missing / slave does not respond

The diagram shows the pT-CUR status LEDs. The 'OK' LED is flashing green, indicating a slave is missing or not responding. The 'SIO' LED is solid grey. LEDs 1, 2, 3, 4, 5, and 6 are solid grey. The 'ERR' LED is solid grey. The 'CONFIG' LED is solid black.

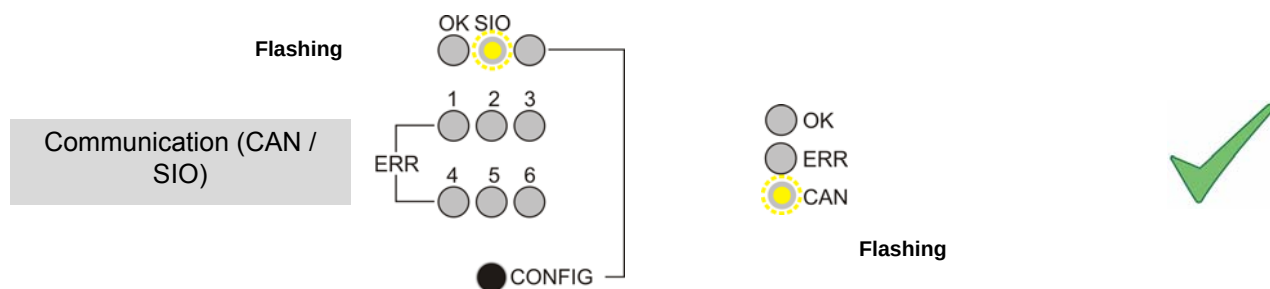
The diagram shows the HCC 06/16/S status LEDs. The 'OK' LED is flashing green. The 'ERR' and 'CAN' LEDs are solid grey. Below them, another set of 'OK', 'ERR', and 'CAN' LEDs are shown, all solid grey.

Indicates problem with slave

Description	The Control Unit pT-CUR can not reach at least one slave in the project setup because he does not respond or react.
Reason	Error cause solution
Slave does not respond	▪ Controller Card HCC 06/16/S (flashing 1 Hz) in Boot Mode - Wait ▪ Controller Card HCC 06/16/S (flashing 2 Hz) in pre-operational mode - Wait
Slave not reacting	Controller Card HCC 06/16/S (LED off) e.g. no supply, other defect ▪ Check wiring system ▪ Check, whether CAN Controller defective

8.2.2 Status display SIO-LED

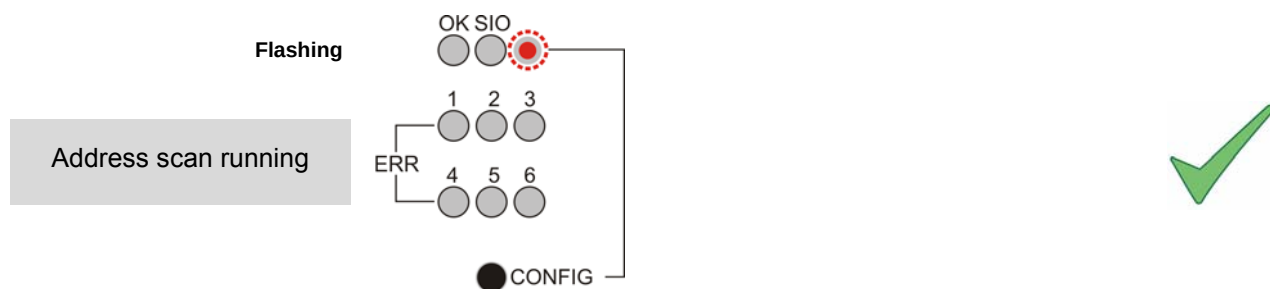
Function and/or signal	pT-CUR	HCC 06/16/S
------------------------	--------	-------------



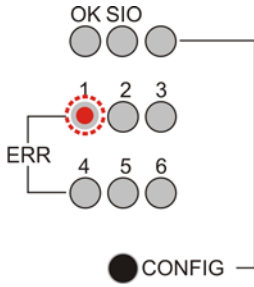
Synchronous flashing pT-CUR and HCC 06/16/S,
and/or continuous light at high bus load.

8.2.3 Status display CONFIG-LED

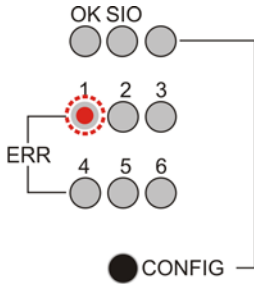
Function and/or signal	pT-CUR
------------------------	--------



8.2.4 Status display ERR1-LED (Error in project setup / slaves)

Function and/or signal	pT-CUR	HCC 06/16/S
Error in project setup / slaves Flashing Blink code 1		 Time out error / slave does not respond

Description	The Control Unit pT-CUR can not reach at least one slave in the project setup because he does not respond or react.
Reason	Error cause solution
Slave does not respond	▪ Controller Card HCC 06/16/S (flashing 1 Hz) in Boot Mode - Wait ▪ Controller Card HCC 06/16/S (flashing 2 Hz) in pre-operational mode - Wait
Slave not reacting	Controller Card HCC 06/16/S (LED off) e.g. no supply, other defect ▪ Check wiring system ▪ Check, whether CAN Controller defective

Function and/or signal	pT-CUR	HCC 06/16/S
Error in project setup / slaves Flashing Blink code 2		 Timeout NodeGuarding Flashing 2 Hz

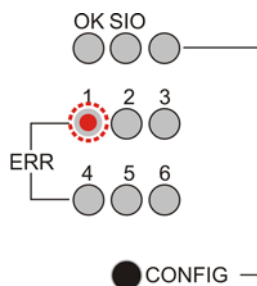
Description	The Control Unit pT-CUR monitors the connected slaves per NodeGuarding. At least one slave can not be reached.
Reason	Error cause solution
Slave does not respond	▪ Controller Card HCC 06/16/S (flashing 1 Hz) in Boot Mode - Wait ▪ Controller Card HCC 06/16/S (flashing 2 Hz) in pre-operational mode - Wait
Slave not reacting	Controller Card HCC 06/16/S (LED off) e.g. no supply, other defect ▪ Check wiring system ▪ Check, whether CAN Controller defective

Function and/or signal pT-CUR

Error in project setup / slaves



Flashing
Blink code 3



Incorrect slave type in project setup

Description

The Control Unit pT-CUR identifies a different component in the slot than in the project setup configured.

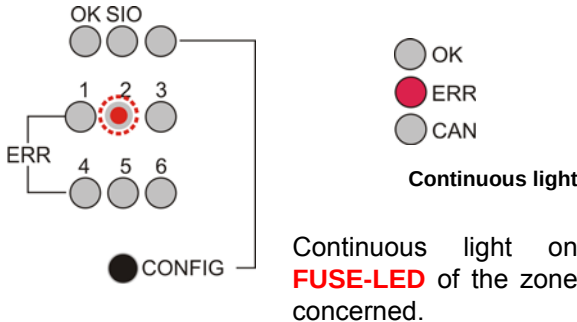
Reason

Incorrect slave type

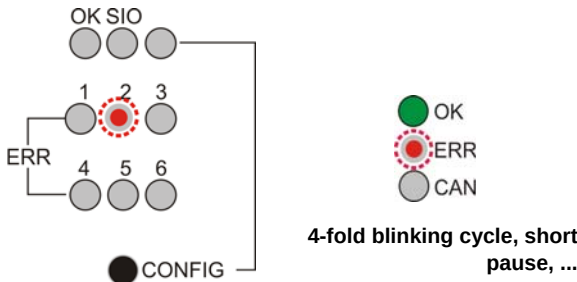
Error cause solution

- Check project setup
- Activate setup (see chapter 7 Setup (page 51))

8.2.5 Status display ERR2-LED (Error heating)

Function and/or signal	pT-CUR	HCC 06/16/S
Error heating		Phase- / fuse-error

Description	The hot runner controller controls the status of fuses in the heating circuit. Each zone has a FUSE-LED, which shows the failure of the fuse in the heating circuit. A phase failure is also detected and signalized.
Reason	Error cause solution
Fuse defective	Check fuse on Controller Card, replace if necessary
Phase missing	▪ Check mains voltage before fuses ▪ Check circuit breaker ▪ Check control fuse

Function and/or signal	pT-CUR	HCC 06/16/S
Error heating		Residual current rSC

Description	The residual current (see parameter [SP05] Max. residual current] set was exceeded for the Controller Card HCC 06/16/S and the Heatings were de-energized (relay on Controller Card OFF). On the Controller Card the residual current for all 6 zones is determined.
Reason	Error cause solution
Tool humid	Check tool on humidity ▪ Current to ground due to humidity
Limit value wrong	Check settings for limit value and adjust it, if necessary

Function and/or signal	pT-CUR	HCC 06/16/S
------------------------	--------	-------------

Error heating Flashing Blink code 3	Current Alarm IOL Heater with too high power / short circuit in heating circuit 3-fold blinking cycle, short pause, ...
---	---

Description

On the Heating output a short circuit was detected.
At switch-on of the zone the heating current is controlled. If a defined limit exceeded, there may be a short-circuit. The Heating circuit is de-energized (relay on Controller Card OFF).

Reason

Heating overloaded

Error cause solution

Check Heating
Check wiring system

Function and/or signal	pT-CUR	HCC 06/16/S
------------------------	--------	-------------

Error heating Flashing Blink code 4	Thyristor alarm tHY
---	---------------------------------------

Description

A thyristor alarm indicates a defect of the thyristor on the Controller Card HCC 06/16/S in the hot runner controller.
Since this is a critical error case which can damage the heating circuit due to overheating, the heating circuit is immediately switched off (relay on Controller Card OFF).

Reason

Defective component

Error cause solution

Replace Controller Card or send hot runner controller in for repair

Function and/or signal

pT-CUR

Error heating

Flashing
Blink code 5

OK SIO

1

2

3

ERR

4

5

6

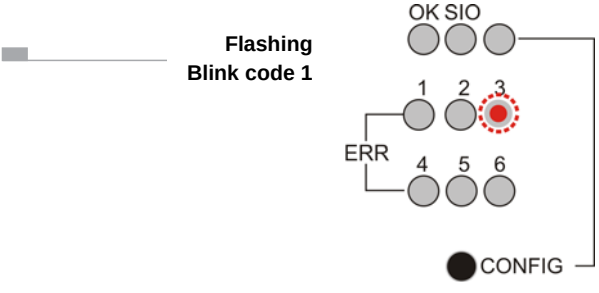
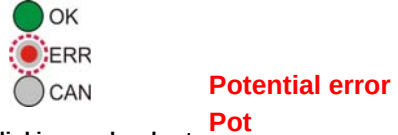
CONFIG

Total breakdown of heater
Hb

Heater not connected

Description	Total breakdown of heater is an alarm message in hot runner controllers. It is output additional with the current alarm, when a break is detected in the heating circuit, i.e. no heating current is measured.
Reason	Error cause solution
Wiring	Check wiring system
Heating	Check heating, measure resistance

8.2.6 Status display ERR3-LED (Error sensor)

Function and/or signal	pT-CUR	HCC 06/16/S
Sensor error		 Potential error Pot 1-fold blinking cycle, short pause, ... on Controller Card, that has detected the potential error hat; 2-fold blinking cycle, short pause, ... on Controller Card, that is switched-off due to a potential error on another Controller Card

Description

On the sensor input a too high voltage is detected.

For protection all zones get de-energized (relay on Controller Card OFF), also the zones on the other Controller Cards, due to the voltage may come from any zone.

Reason

Error on tool

Error cause solution

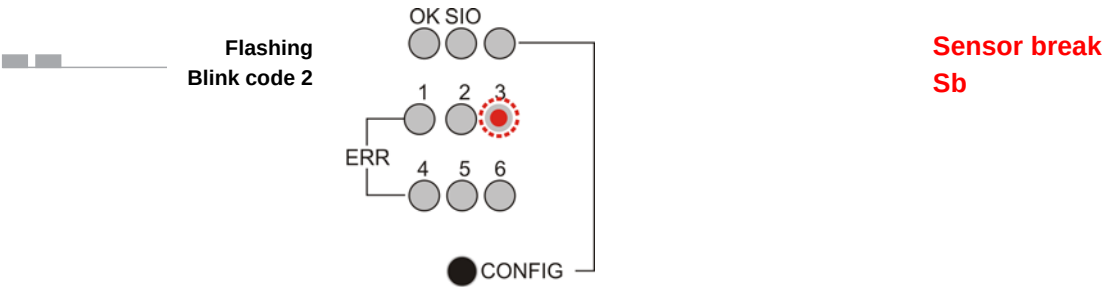
Check sensor input

Check grounding/sensor

Function and/or signal

pT-CUR

Sensor error



Description

A sensor break is a disconnection in the sensor circuit where the sensor wire is squeezed somewhere in between sensor and controller.
After detection of an error an error message is immediately output and the heating of the corresponding zone is switched OFF (parameter [P003] Output value = 0).

Reason

Sensor break

Error cause solution

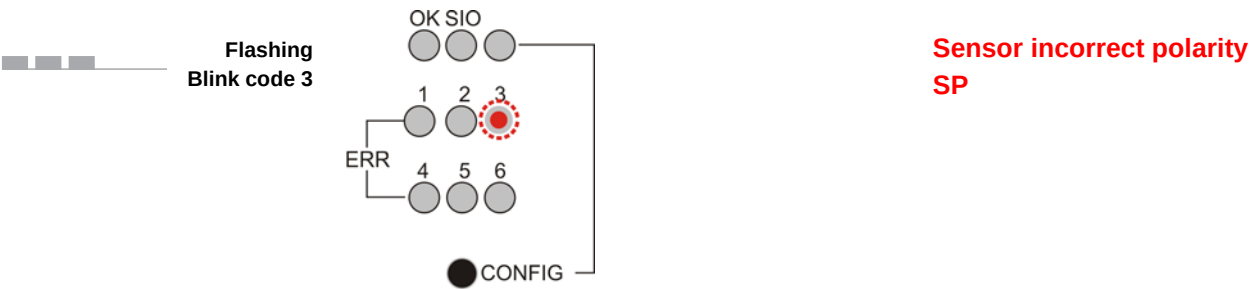
Check the connected sensors

- Check connecting cable of hot runner controller
- Check sensor input

Function and/or signal

pT-CUR

Sensor error



Description

Sensor incorrect polarity means, that the thermocouple is connected with the wrong polarity to the controller.
Due to the incorrect wiring, the controller measures a faulty actual value. For not yet heated tool, the fault is not visible. Only when the zone is heated up, the error is immediately detected and an error message displayed.

Reason

Sensor incorrect polarity

Error cause solution

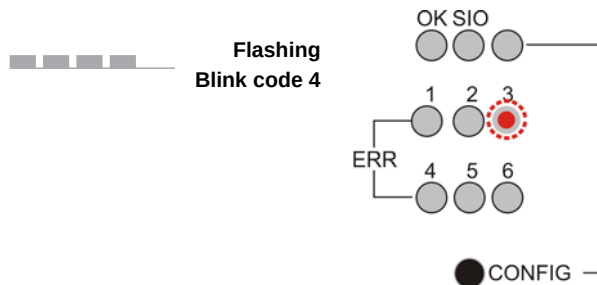
Check the connected sensors

- Check sensor connection +/-

Function and/or signal

pT-CUR

Sensor error

Sensor alarm
SSC

Short circuit in sensor circuit

Description

In a sensor short-circuit fault, we understand the case where

a) the sensor wire is squeezed somewhere in between sensor and controller and a short circuit exists

b) the sensor is not in the intended position (removed or is swapped with another). Through the defect in the cable to the controller a low temperature value is forecast. The actual temperature is much higher than the measured temperature.

If there is no rise in temperature measured in a zone type (considered nozzles and manifold) in a dependent time, a sensor alarm is displayed to the operator. To prevent damage to the appropriate zone, the heating is turned OFF (parameter [P003] Output value = 0).

A sensor alarm can be faulty, and that is when the heat output of the zone is too small. It shows an identical error image.

Reason

Short circuit in sensor circuit

Sensor position

Error cause solution

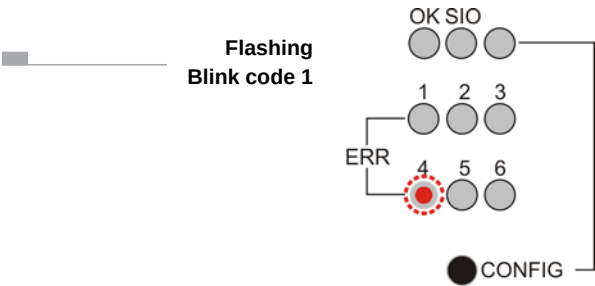
Check the connected sensors

■ Check connecting cable of hot runner controller

Check position

8.2.7 Status display ERR4-LED (Data error)

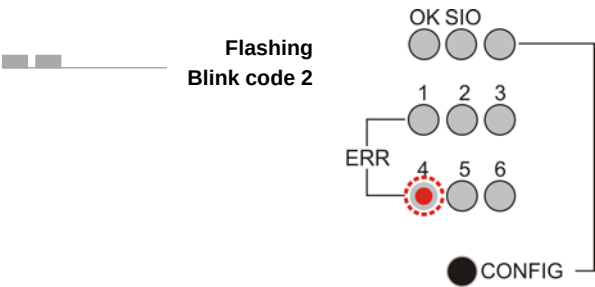
Function and/or signal	pT-CUR
Data fault	



Channel data error pT-CUR

Description	A check sum is determined for the channel parameters of the Control Unit pT-CUR. Is for some reason for one of these parameters an error detected that can not be corrected, the Controller Unit generates a channel data error.
Reason	Error cause solution
Check sum error in EE-PROM; EEPROM OK	Check parameters. Edit any channel parameter [P***]. Error should disappear after a short time.
Check sum error in EE-PROM; EEPROM defective	Replace Controller Unit pT-CUR

Function and/or signal	pT-CUR
Data fault	

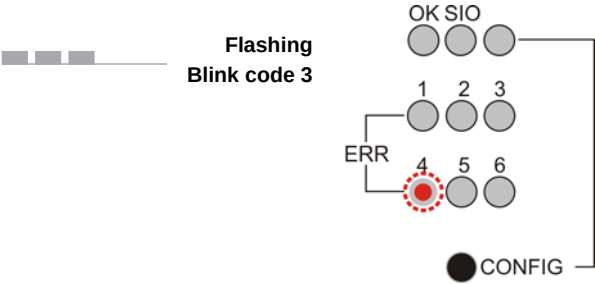


Channel data error slave

Description	A check sum is determined for the channel parameters of the Controller Card HCC 06/16/S. Is for some reason for one of these parameters an error detected that can not be corrected, the Controller Card generates a channel data error.
Reason	Error cause solution
Check sum error in EE-PROM; EEPROM OK	Check parameters. Edit any channel parameter [P***]. Error should disappear after a short time.
Check sum error in EE-PROM; EEPROM defective	Replace Controller Card HCC 06/16/S

Function and/or signal
pT-CUR

Data fault

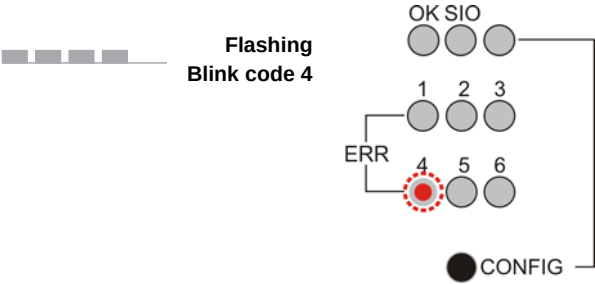


System data error pT-Cur

Description	A check sum is determined for the system parameters of the Controller Unit pT-CU-PCB. Is for some reason for one of these parameters an error detected that can not be corrected, the Controller Unit generates a system data error.
Reason	Error cause solution
Check sum error in EE-PROM; EEPROM OK	Check parameters. Edit system parameter [SP03]. Error should disappear after a short time.
Check sum error in EE-PROM; EEPROM defective	Replace Controller Unit pT-CUR

Function and/or signal
pT-CUR

Data fault



System data error slave

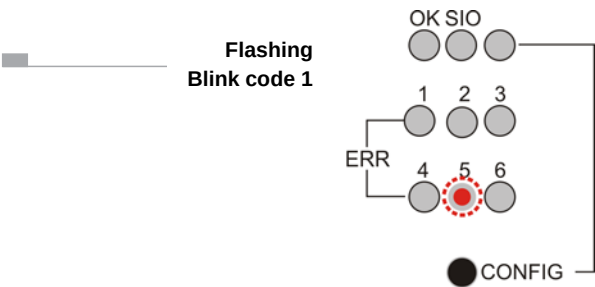
Description	A check sum is determined for the system parameters of the Controller Card HCC 06/16/S. Is for some reason for one of these parameters an error detected that can not be corrected, the Controller Card generates a system data error.
Reason	Error cause solution
Check sum error in EE-PROM; EEPROM OK	Check parameters. Edit system parameter [SP03]. Error should disappear after a short time.
Check sum error in EE-PROM; EEPROM defective	Replace Controller Card HCC 06/16/S

8.2.8 Status display ERR5-LED (other errors)

Function and/or signal

pT-CUR

Other errors



Heater alarm
hSE

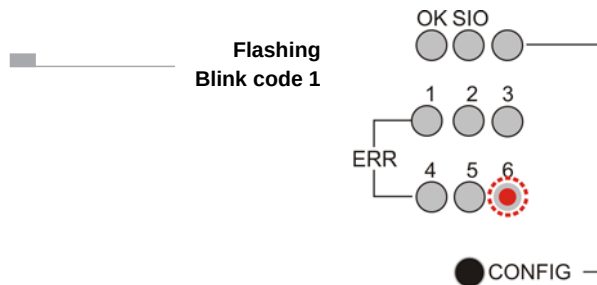
Heat sink temperature too high

Description	The heat sink temperature has exceeded the limit value. All outputs on the Controller Card are switched off (parameter [P003] Output value = 0).
Reason	Error cause solution
High temperature at installation location	Check environmental conditions at installation location
Overload	Check: Coincidence factor = 100% duty ratio permanently at ambient temperature <= 25°C; At ambient temperatures from 25 °C to 45 °C, the coincidence factor can reduce up to 70% depending on the average output values and their duration.
Connector to fan defective	- Check connector/ connecting cable - Replace if necessary
Mechanical defect of fan	Check fan and clean if necessary

8.2.9 Status display ERR6-LED (actuator deactivated)

Function and/or signal pT-CUR

Actuator deactivated

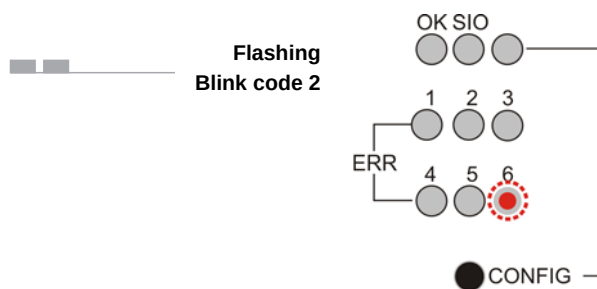


pt-CUR on „OUT“

All heating outputs are switched off. Alarms are no longer processed.

Function and/or signal pT-CUR

Actuator deactivated



Actuator deactivated

Triggered by a digital input, all heating outputs are switched off. Alarms are no longer processed.

9 Replacement of single components

According to the messages

- on PC with installed PSG own PC software (project setup and configuration tool flexotempMANAGER or operation software **TEMPSoft2**) and/or via bus connection to machine control.
- as status display by status LED's on the profiTEMP Controller Card HCC 06/16/S

and the suggested measures for ↗Status display - Trouble Shooting (page 55), trouble shooting, the components are replaced, where necessary.

You should first contact the manufacturer/supplier for advice.

In all other, here not explicitly described cases, send the System profiTEMP in for repair.



In all cases where the adjacent symbol is to be seen on the device, note the safety instructions necessarily on the System profiTEMP identified by this symbol/sign/label. In all cases this start-up and service manual must be consulted.

In case of replacement of single components, for maintenance, note ↗Security References (page 5) necessarily!



Work like e.g. maintenance and repair for System profiTEMP may be carried out by authorized and skilled qualified personnel only. Only qualified personnel, skilled and on the risks trained, may use the System profiTEMP. The relevant accidental regulations as well as other general approved safety-relevant, occupational-medical norms have to be obeyed.



Before working on the System profiTEMP always switch-off the mains switch and make sure that the System profiTEMP is de-energized. Protect the supply voltage against unintentional reclosing.



Single components must be replaced by components of the same type (see type plate). Take care to transfer the same settings (e.g. parameterization).



Before switch-on of the zones it is to be ensured that the System profiTEMP is configured for the application (see chapter ↗Intended use (page 6)). An incorrect configuration can lead to damage to the control section or to injuries to persons.



The action concerning the handling of ESD devices must be observed!
Electrostatic sensitive devices!

9.1 Hot Runner Controller Card HCC 06/16/S - Replace fuses



Pay attention to ↗Security References Component identification, according to ↗Status display ERR2-LED (Error heating) (page 62).

Pay attention to ↗Security References (page 5)!



Working on the System profiTEMP are only allowed in de-energized status of System profiTEMP.



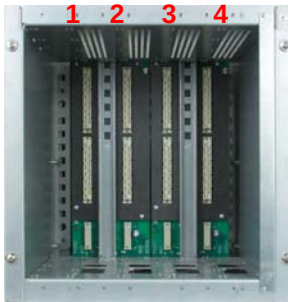
Working on the System profiTEMP may be carried out by authorized and skilled qualified personnel only.



Fuse
Use ONLY fuses of type SIBA FF 16A Art.No. 7012540.16!
(see chapter ↗Consumable and Spare Parts (page 75))

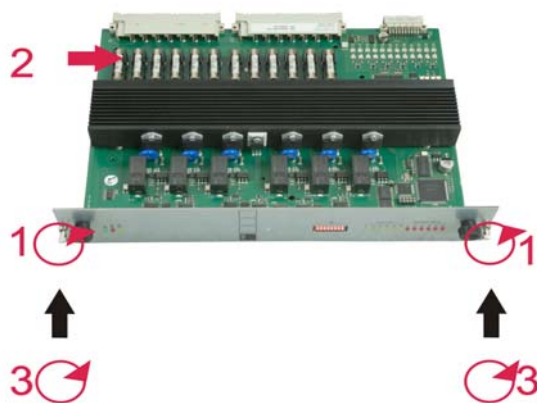


The action concerning the handling of ESD devices must be observed!
Electrostatic sensitive devices!



Cards count at System profiTEMP from **left to right**.

Replace fuse on card



(1) Open locking for card

Lift the card out of the slot carefully.

(2) Replace fuses (F1...6, F7...F12). Look for right fit.

Insert card carefully into the slot into the guide brackets top/bottom and regard the latching of the connectors.

(3) Tighten locking for card.

After reconnection of the power supply and the waiting for the start-up time of all components are either

- LED displays (see chapter ↗Status display - Trouble Shooting (page 55)) or
- the PSG own operating and display unit or
- the visualization of the machine control

to check, that the System profiTEMP is running correct after exchange of fuses on the components.

9.2 Replace Hot Runner Controller Card HCC 06/16/S



Pay attention to ↗Security References Component identification, according to ↗Status display ERR2-LED (Error heating) (page 62).

Pay attention to ↗Security References (page 5)!



Working on the System profiTEMP are only allowed in de-energized status of System profiTEMP.



Working on the System profiTEMP may be carried out by authorized and skilled qualified personnel only.

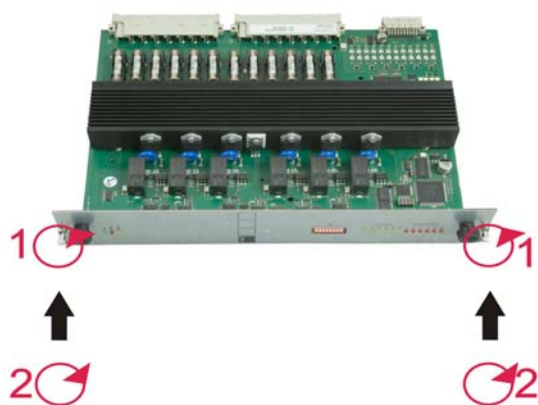


The action concerning the handling of ESD devices must be observed!
Electrostatic sensitive devices!



Cards count at System profiTEMP from **left to right**.

Replace card



(1) Open locking for card

Lift the card out of the slot carefully.

Insert spare card carefully into the slot into the guide brackets top/bottom and regard the latching of the connectors.

(2) Tighten locking for card.

Make the HCC 06/16/S card known to the System profiTEMP, see chapter ↗Setup (page 51) and ↗at replacement of Controller Unit pT-CUR (page 53).

After reconnection of the power supply and the waiting for the start-up time of all components are either

- LED displays (see chapter ↗Status display - Trouble Shooting (page 55)) or
- the PSG own operating and display unit or
- the visualization of the machine control

to check, that the System profiTEMP is running correct after exchange of the component.

9.3 Replace Control Unit Rack pT-CUR

If it is necessary to replace a Control Unit pT-CUR, you should first contact the manufacturer/supplier for advice.

10 Appendix

10.1 Consumable and Spare Parts

Order number	Article description	
pT-Rack		
025 330-02W	profiTEMP pT-Rack 02 Wall	
025 330-04W	profiTEMP pT-Rack 04 Wall	
025 330-08W	profiTEMP pT-Rack 08 Wall	
025 330-02F	profiTEMP pT-Rack 02 Front	
025 330-04F	profiTEMP pT-Rack 04 Front	
025 330-08F	profiTEMP pT-Rack 08 Front	
025 330-02S	profiTEMP pT-Rack 02 Swing	
025 330-04S	profiTEMP pT-Rack 04 Swing	
025 330-06S	profiTEMP pT-Rack 06 Swing	
025 330-08S	profiTEMP pT-Rack 08 Swing	
Control Unit Rack		
025 343	profiTEMP pT-CUR 250/-/HUB/-/IOF/USB	250 zones
025 344-02	profiTEMP pT-CUR 250/VARAN/HUB/WKZ/IOK/USB	250 zones
025 344-03	profiTEMP pT-CUR 250/-/HUB/WKZ/IOK/USB	250 zones
025 344-04	profiTEMP pT-CUR 250/VARAN/HUB/WKZ/IOK/USB	250 zones
025 344-05	profiTEMP pT-CUR 250/-/HUB/-/IOK/USB	250 zones
Hot Runner Controller Card		
025 316-00	profiTEMP Controller Card HCC 06/16/S EU/US	6 zones
Fuses		
030 612	Fuse To protect electronics use ONLY fuses of type SIBA FF 16A Art.No. 7012540.16!	6x32 mm
Connecting Cable		
052 262-011	Ribbon cable pT-CUR to pT-PP, 10-pole connector 400mm	CAN-Bus in pT-Rack
052 264-20	Flat round cable shielded, 10-pole with connector on both sides 2 m	CAN-Bus for several pT-Rack
025 320-01	profiTEMP connecting cable pT-PP-PCB	Power Plane
Dummy board		
025 331-00	profiTEMP Rack dummy board metal sheet pT-BPB06TE	
025 331-10	profiTEMP Rack dummy board metal sheet pT-BPB12TE	

Article number of different types on request

10.2 Version History

Version	Date	Changes
2.00.02	02/02/2015	In detail, the following amendments/corrections were made: ■ cTUVus
2.00.01	01/21/2015	In detail, the following amendments/corrections were made: ■ Order numbers ■ Technical data version 1501
2.00.00	11/19/2014	In detail, the following amendments/corrections were made: ■ CAN termination 3 pins ■ Reference to operation of flexotempMANAGER at creation of pT-CUR ■ Activation of address scan by key CONFIG specified ■ Modifications for UL
1.00.03	1/14/2014	In detail, the following amendments/corrections were made: ■ Status display ERR5-LED (other errors), overload specified
1.00.02	11/8/2013	In detail, the following amendments/corrections were made: ■ PSG specific document variant created
1.00.01	8/12/2013	In detail, the following amendments/corrections were made: ■ PSG -, customer specific Doc-Variant
1.00.00	7/26/2013	First publication.
...	...	...
Manufacturer/Supplier		PSG Plastic Service GmbH Pirnaer Strasse 12-16 68309 Mannheim Germany Tel. +49 621 7162 0 Fax +49 621 7162 162 www.psg-online.de info@psg-online.de